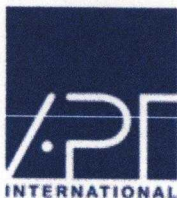


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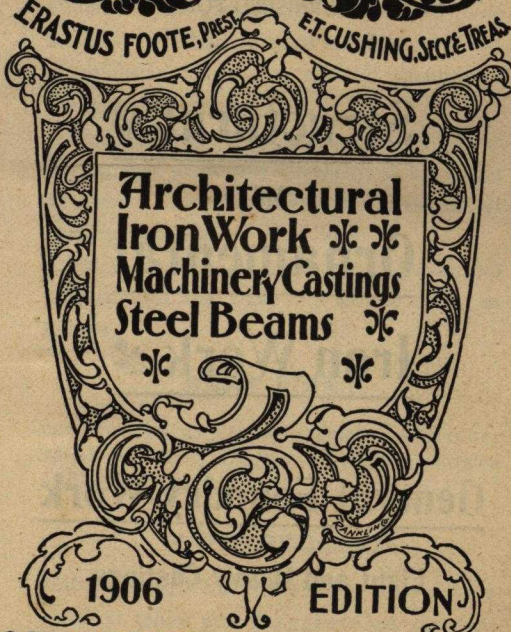
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DEARBORN & FOUNDRY COMPANY.

ERASTUS FOOTE, PRES.
E.T. CUSHING, SECY & TREAS.



1906

EDITION

OFFICE & WORKS, 1525 DEARBORN
STREET, NEAR SIXTEENTH STREET,
CHICAGO

Dearborn Foundry Co.

ESTIMATES AND DESIGNS

FURNISHED FOR

Structural 

AND

Ornamental

Iron Work 

General Foundry Work

Light and Heavy Castings



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DEARBORN FOUNDRY COMPANY.

PRICE \$2.00.

PREFACE

In the following edition, we present standard sections of Steel Beams, Channels and Angles, as adopted by the American Association of Steel Manufacturers, in January, 1896, including 24 inch, 20 inch and 18 inch Beams; also new tables giving safe loads for all these sections. We have adopted a different method of numbering our shapes, and call attention to the system as shown herein.

The manufacture of Wrought Iron Beams having been practically discontinued, the tables for Beams, Channels, Angles, and Tees are all based upon the use of Mild Steel.

For convenience in referring to tables, we have divided the book into two sections, as follows:

PART FIRST

embraces pages 4 to 104 inclusive, and is devoted to Steel Beams, Channels, Angles and Tees.

PART SECOND

embraces pages 105 to 272 inclusive, and is devoted to tables and designs of Cast Iron Columns, Lintels, Store Fronts, and Miscellaneous Architectural Iron Work.

STOCK SIZES

AND WEIGHTS OF

STEEL BEAMS

CARRIED BY THIS COMPANY
IN CHICAGO.

Size in inches	Weight per foot in lbs.	Weight per foot in lbs.	Weight per foot in lbs.	Weight per foot in lbs.	Weight per foot in lbs.
24	100	80			
20	80	65			
18	65	55			
15	80	60	50	42	
12	55	50	40	35	31½
10	35	30	25		
9	30	25	21		
8	25½	23	18		
7	17½	15			
6	17½	12½			
5	12½	9½			
4	9½	7½			
3	5½				

To avoid vexatious delays almost invariably caused when ordering beams from eastern mills, this company carries in stock in Chicago about fifteen hundred tons of steel beams, channels, angles, tees, zeos and plates, and is fully equipped to cut, punch, frame and ship promptly.

STOCK SIZES

AND WEIGHTS OF

STEEL CHANNELS

CARRIED BY THIS COMPANY
IN CHICAGO.

Size in inches.	Weight per foot in lbs.	Weight per foot in lbs.	Weight per foot in lbs.
15	40	33	
12	30	25	$20\frac{1}{2}$
10	25	20	15
9	20	15	$13\frac{3}{4}$
8	$16\frac{1}{4}$	$13\frac{1}{4}$	$11\frac{1}{4}$
7	$14\frac{3}{4}$	$12\frac{1}{4}$	$9\frac{3}{4}$
6	$9\frac{3}{4}$	8	
5	9	$6\frac{1}{2}$	
4	$6\frac{1}{4}$	$5\frac{1}{4}$	
3	5		

To avoid vexatious delays, almost invariably caused when ordering beams from eastern mills, this company carries in stock in Chicago about fifteen hundred tons of steel beams, channels, angles, tees, zees and plates, and is fully equipped to cut, punch. frame and ship promptly.

STOCK SIZES

AND WEIGHTS OF

STEEL ANGLES

CARRIED BY THIS COMPANY
IN CHICAGO.

Sizes, Inches.	Weight per foot.	Sizes, Inches.	Weight per foot.
6 x6 x $\frac{5}{8}$	24.2	3 x3 x $\frac{5}{16}$	6.1
6 x6 x $\frac{1}{2}$	19.6	3 x2 $\frac{1}{2}$ x $\frac{5}{16}$	5.6
6 x6 x $\frac{3}{8}$	14.9	3 x2 x $\frac{5}{16}$	5.0
6 x4 x $\frac{1}{2}$	16.2	2 $\frac{1}{2}$ x2 $\frac{1}{2}$ x $\frac{5}{16}$	5.0
6 x4 x $\frac{3}{8}$	12.3	2 $\frac{1}{2}$ x2 $\frac{1}{2}$ x $\frac{1}{4}$	4.1
5 x5 x $\frac{1}{2}$	16.2	2 $\frac{1}{2}$ x2 x $\frac{1}{4}$	3.7
5 x4 x $\frac{3}{8}$	11.0	2x 2 x $\frac{5}{16}$	4.
5 x3 $\frac{1}{2}$ x3 $\frac{3}{8}$	10.4	2x 2 x $\frac{1}{4}$	3.2
4 x4 x $\frac{1}{2}$	12.8	1 $\frac{3}{4}$ x1 $\frac{3}{4}$ x $\frac{1}{4}$	2.8
4 x4 x $\frac{3}{8}$	9.8	1 $\frac{1}{2}$ x1 $\frac{1}{2}$ x $\frac{1}{4}$	2.4
4 x3 x $\frac{3}{8}$	8.5	1 $\frac{1}{4}$ x1 $\frac{1}{4}$ x $\frac{3}{16}$	1.5
3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{3}{8}$	8.5	1 x1 x $\frac{3}{16}$	1.2
3 $\frac{1}{2}$ x3 $\frac{1}{2}$ x $\frac{5}{16}$	7.2	$\frac{3}{4}$ x $\frac{3}{4}$ x $\frac{3}{16}$	0.9
3 $\frac{1}{2}$ x3 x $\frac{5}{16}$	6.6		
3 x3 x $\frac{3}{8}$	7 2		

STOCK SIZES

AND WEIGHTS OF

STEEL TEES

CARRIED BY THIS COMPANY
IN CHICAGO.

Sizes, inches	Weight per foot.
4 x 4 x $\frac{1}{2}$	13.9 lbs.
3 $\frac{1}{2}$ x 3 $\frac{1}{2}$ x $\frac{3}{8}$	9.30 "
3 x 3 x $\frac{3}{8}$	7.9 "
2 $\frac{1}{2}$ x 2 $\frac{1}{2}$ x $\frac{5}{16}$	5.6 "
2 x 2 x $\frac{1}{4}$	3.7 "
1 $\frac{3}{4}$ x 1 $\frac{3}{4}$ x $\frac{1}{4}$	3.2 "
1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{3}{16}$	2.0 "
1 $\frac{1}{4}$ x 1 $\frac{1}{4}$ x $\frac{3}{16}$	1.7 "
1 x 1 x $\frac{1}{8}$	1.0 "

DIRECTIONS

FOR SPECIFYING BUILDING WORK REQUIRED.

All requests for quotations should be accompanied by an approximate bill of items, giving sizes and lengths, also number of stories in building, and if possible, thickness of walls and the purpose for which building is to be used.

As it is impossible to have a price list of such a variety of work, it is of great assistance if this information be given.

Specify design numbers when writing us.

Should a design differing from any of our illustrations be desired, we will be pleased to quote price.

Our Terms are

NET CASH
NO DISCOUNT ALLOWED

and all quotations and sales are made on this basis.

We allow thirty days from date of bills for settlement to parties in approved credit.

Quotations subject to change without notice. All agreements are contingent upon strikes, accidents and other delay unavoidable or beyond our control.

**1,500 Tons of Steel Beams carried in stock
thus enabling us to fill orders promptly.**

PRICE LIST AND EXTRAS FOR BEAMS AND CHANNELS.

	Extra Cents per pound.
Beams, plain, 15 inch and smaller, Base Price	
Channels, " 15 " " " " " "	
18", 20" and 24" Beams	1/10
NEW LIST OF EXTRAS TO BE ADDED TO PRICE OF PLAIN BEAMS AND CHANNELS, ADOPTED JANUARY 1, 1902.	
1. For cutting to length with less variation than plus or minus 3/8 inch.....	15/100
2. Plain punching, one size hole, in web only	15/100
3. Plain punching, one size hole, in one or both flanges.....	15/100
4. Plain punching, one size hole, in either web and one flange or web and both flanges.....	25/100
5. Plain punching, each additional size hole, in either web or flange, web and one flange or web and both flanges.....	15/100
6. Plain punching, one size hole in flange and another size hole in web of the same beam or channel.....	40/100
7. Punching and assembling into girders....	35/100
8. Coping, ordinary beveling, including cut- ting to exact length, with or without punching, including the riveting or bolt- ing of standard connection angles.....	35/100
9. For painting or oiling one coat with ordi- nary oil or paint.....	10/100
10. Cambering beams and channels and other shapes for ships or other purposes.....	25/100
11. Bending or other unusual work.....	{ Shop Rates
12. For fittings, whether loose or attached, such as angle connections, bolts and separators, tie-rods, etc.....	
	155/100

Tie rods in all cases where estimated upon in con-
nection with beams or channels to be classified as
fittings.

Material subject to Government Inspection or inspec-
tion, 20/100 cent extra.

GENERAL NOTES.

In 1896 the makers of Beams and Channels established uniform weights for the different sizes. These are given in the following sections and tables, and in addition, the sizes most commonly used are listed on pages 4 and 5.

Architects will avoid delays in obtaining material by, as far as possible, specifying these stock weights.

Attention is called to table of minimum spans, for which standard connection angles may be safely used, when beams are loaded to their full capacity (see page 55). For shorter spans heavier connections should be used.

Tables for I Beams, etc., give the loads which a beam will carry safely (distributed uniformly over its length) for the distances indicated between supports. These loads include the weight of the beam, which must be deducted in order to arrive at the net load which the beam will carry.

Beams used as floor joists, carrying plastered ceilings, should have a depth of at least one-twentieth of the distance between supports. Care should be exercised in using angles, tees and Z bars, to conform to this proper limit of deflection, i. e., depth should be at least one-twentieth of span.

The heavy black lines in tables of safe loads of beams indicate the limit beyond which the beams should not be used, if intended to carry plastered ceilings.

Where two or more beams are used to form a girder, cast iron separators should be used at least every twenty times the width of the flange.

It has been assumed in these tables that proper provision is made for preventing the compression flanges of the beams from deflecting sideways. They should be held in position at distances not exceeding twenty times the width of the flange, otherwise the stress allowed should be reduced as per the following table.

Weights and Spans of Fireproof Hollow Tile Floor Arches.

Depth of Arch.	Span Between Beams.	Weight per square foot.
15	7 ft 6 in. to 10 ft 0 in.	42
12	6 " 0 " to 8 " 0 "	35
10	5 " 0 " to 7 " 0 "	34
9	4 " 6 " to 6 " 6 "	33
8	4 " 0 " to 6 " 0 "	32
7	3 " 6 " to 5 " 6 "	30
6	3 " 0 " to 5 " 0 "	28

WEIGHT OF HOLLOW TILE PARTITIONS.

8 in. Partition.....	Weights 30 lbs. per square foot
6 " "	" 24 " " " "
5 " "	" 20 " " " "
4 " "	" 15 " " " "
3 " "	" 13 " " " "
2 " "	" 11 " " " "

WEIGHT OF TILE FOR ROOFING.

3 in. Book Tile.....Weights 15 lbs. per square foot

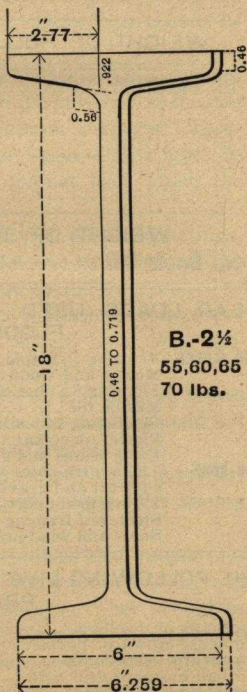
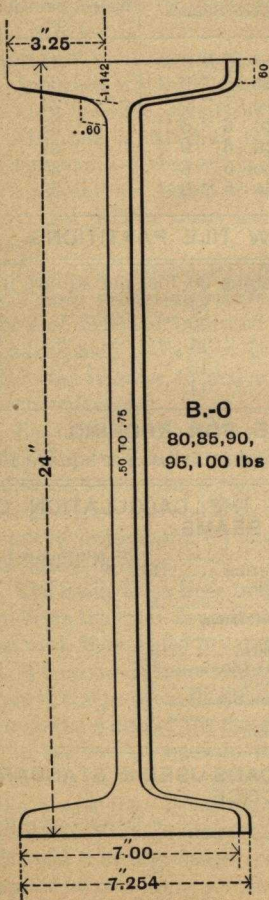
DEAD LOADS USED IN THE CALCULATION OF FLOOR BEAMS.

FOR FLOORS —Flooring $\frac{7}{8}$ maple.....	4 lbs. per square foot
Mosaic and wood flooring.....	10 " " " "
Flooring $\frac{7}{8}$ pine, single.....	3 " " " "
Marble tile.....	15 " " " "
Deadening 1 inch in thickness	9 " " " "
Plaster on ceiling.....	5 " " " "
Floor beams and girders.....	10 " " " "
FOR ROOF —3 inch terra-cotta book tile	22 " " " "
6 ply tar and gravel roof.....	6 " " " "
T irons to support book tile.....	4 " " " "
Steel roof framing	8 " " " "
Snow and wind pressure.....	30 " " " "

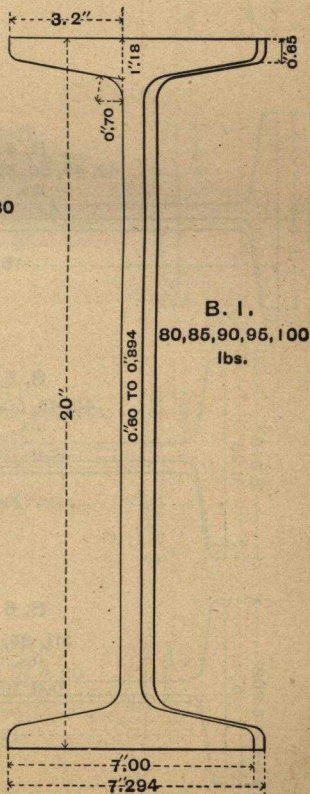
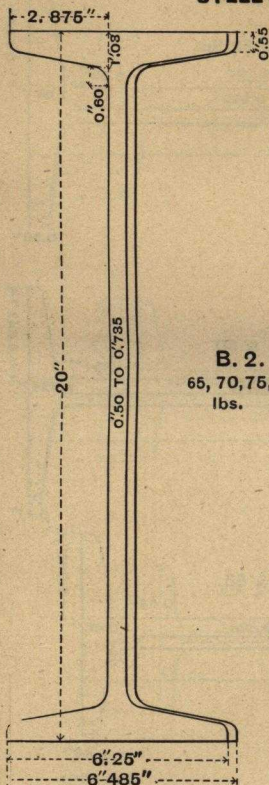
THE FOLLOWING LIVE LOADS USED IN STANDARD PRACTICE.

For floors of dwellings.....	40 lbs. per square foot
For dense crowd of people.....	80 " " " "
For theatre, church, etc.....	80 " " " "
For ball rooms or drill halls.....	90 " " " "
For warehouses, from.....	250 " " " ft. up
For factories.....	200 to 450 lbs. per square foot

STANDARD SECTIONS STEEL BEAMS



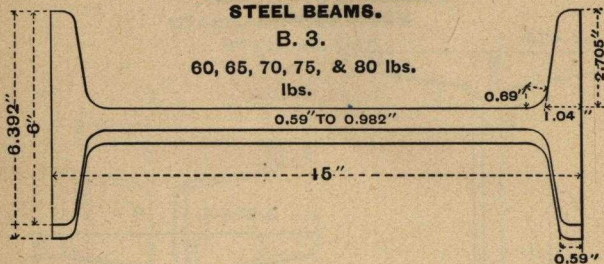
STANDARD SECTIONS.
STEEL BEAMS.



STANDARD SECTIONS. STEEL BEAMS.

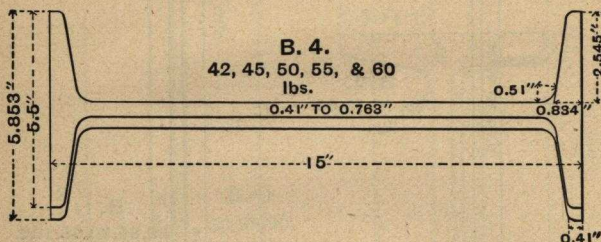
B. 3.

60, 65, 70, 75, & 80 lbs.
lbs.



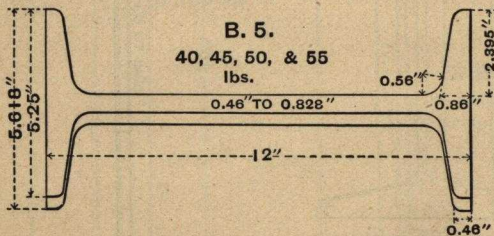
B. 4.

42, 45, 50, 55, & 60
lbs.



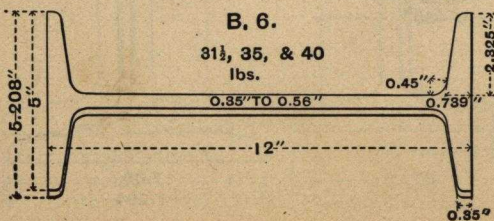
B. 5.

40, 45, 50, & 55
lbs.

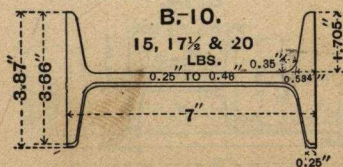
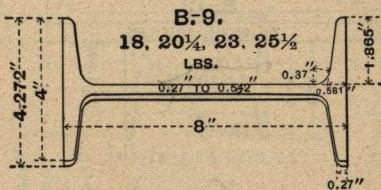
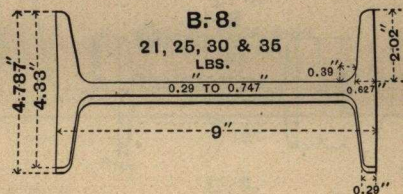
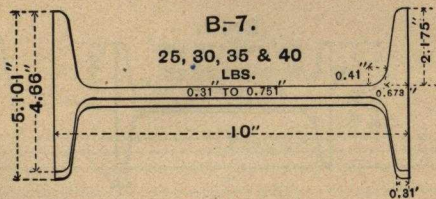


B. 6.

31½, 35, & 40
lbs.

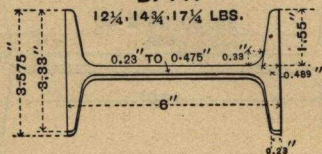


STANDARD SECTIONS.
STEEL BEAMS.

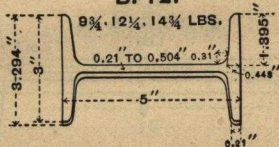


STANDARD SECTIONS.
STEEL BEAMS.

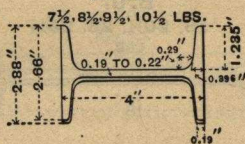
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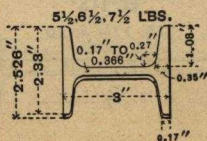
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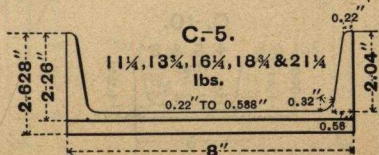
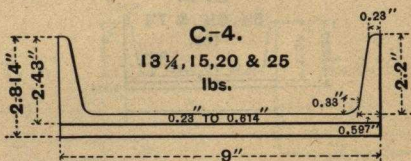
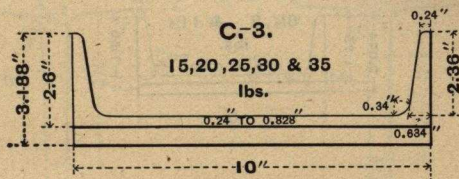
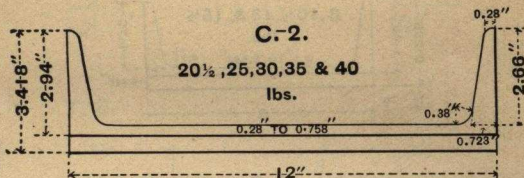
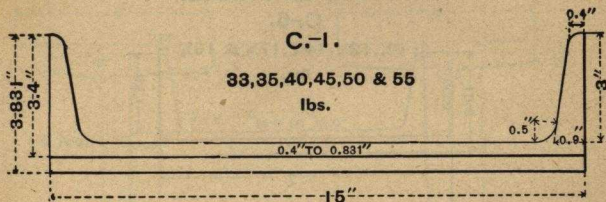
B-13.



B-14.



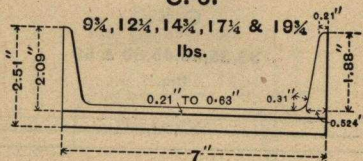
STANDARD SECTIONS.
STEEL CHANNELS.



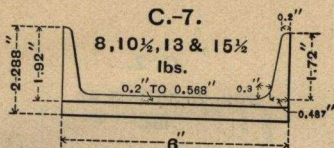
STANDARD SECTIONS.

STEEL CHANNELS.

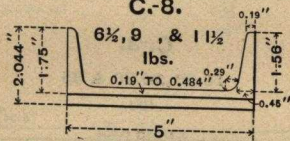
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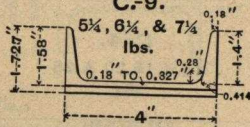
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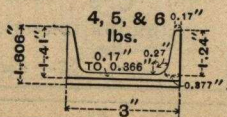
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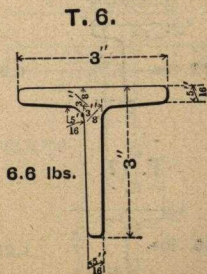
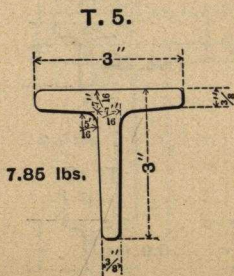
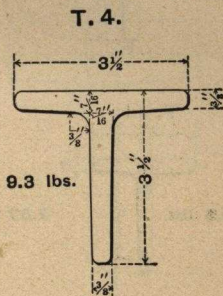
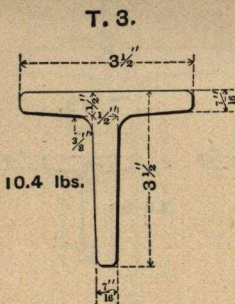
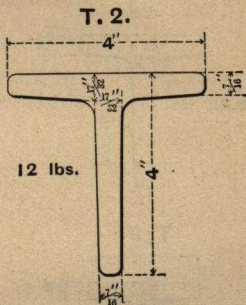
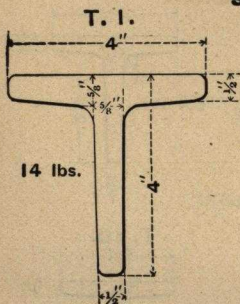
C-9.



C-10.

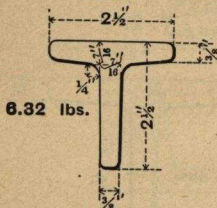


EQUAL LEGGED TEES.
STEEL.

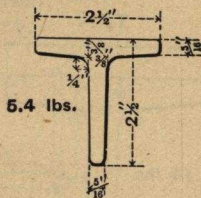


EQUAL LEGGED TEES. STEEL.

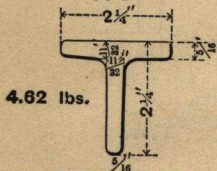
T. 7.



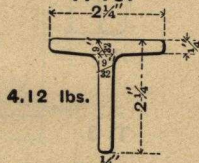
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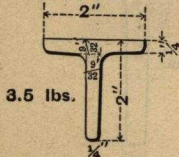
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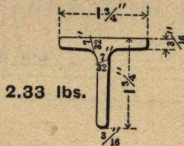
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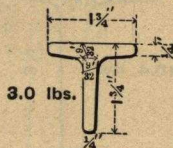
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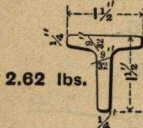
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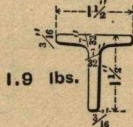
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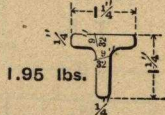
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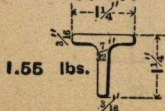
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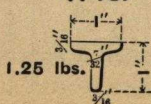
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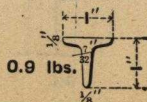
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T. 18.



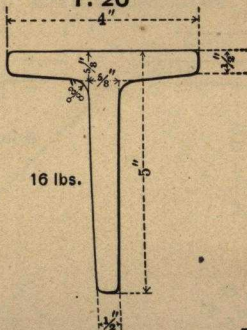
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UNEQUAL LEGGED TEES

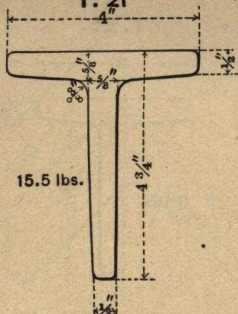
STEEL

T. 20



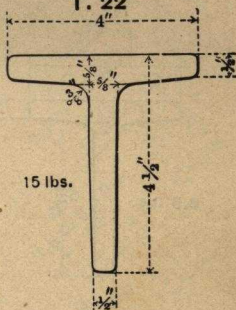
16 lbs.

T. 21



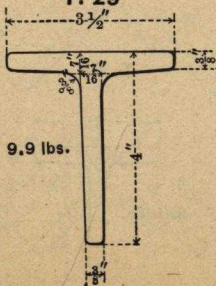
15.5 lbs.

T. 22



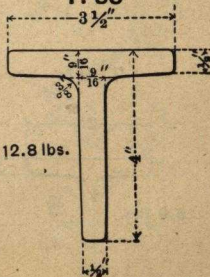
15 lbs.

T. 29



9.9 lbs.

T. 30

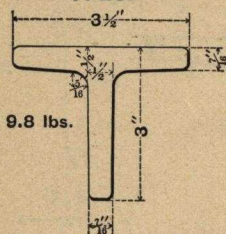


12.8 lbs.

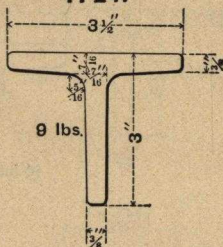
DEARBORN FOUNDRY COMPANY.

UNEQUAL LEGGED TEES.
STEEL.

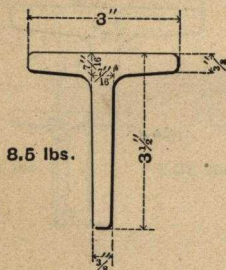
T. 23.



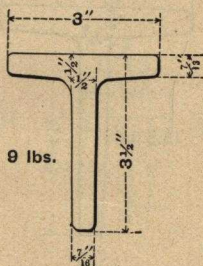
T. 24.



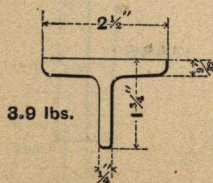
T. 25.



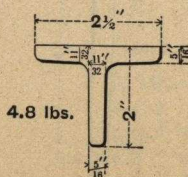
T. 26.



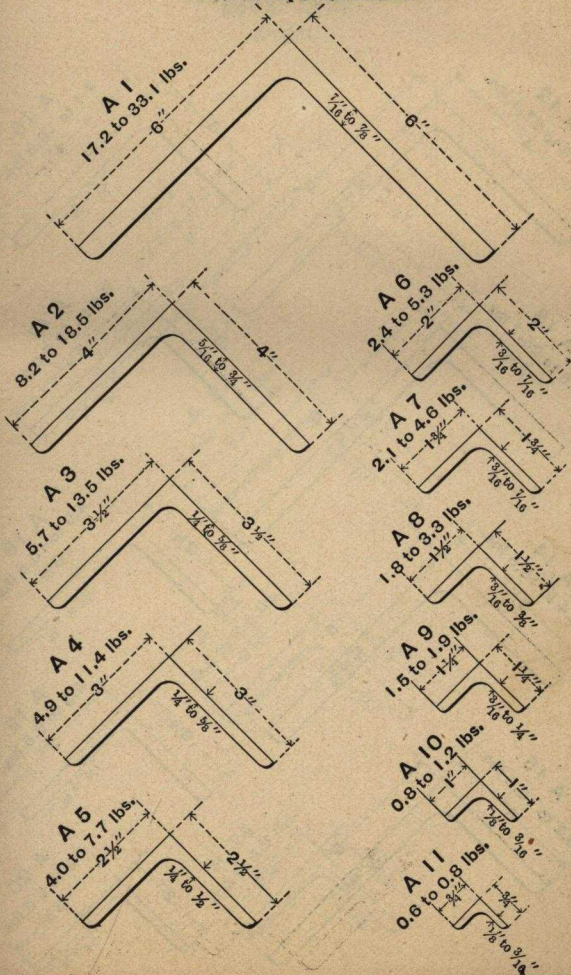
T. 27.



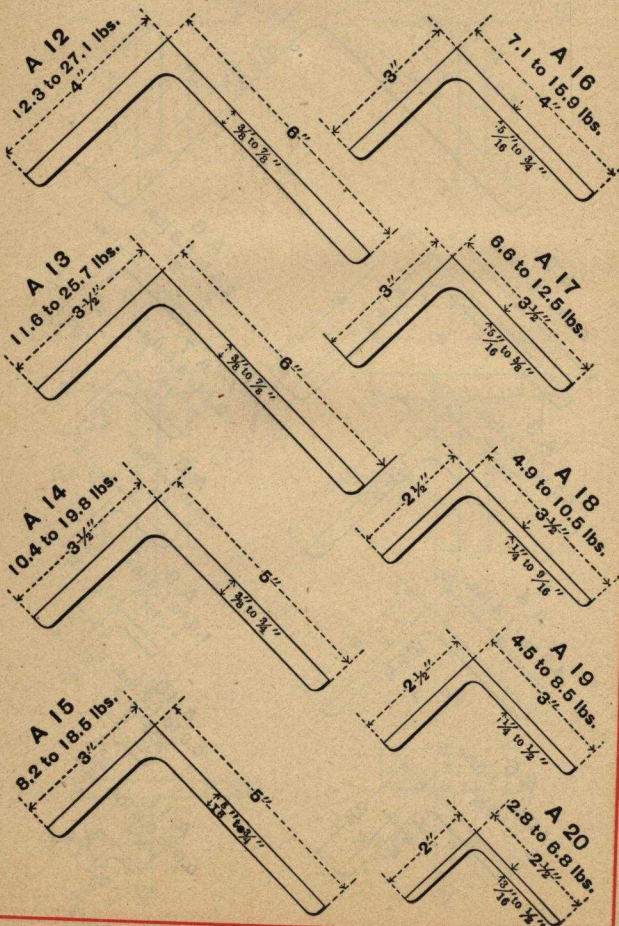
T. 28.



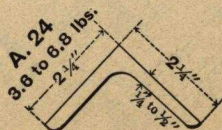
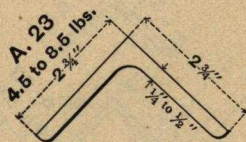
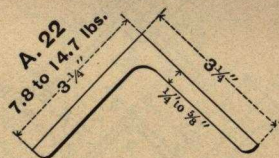
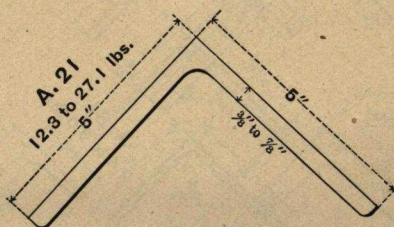
STANDARD SECTIONS
STEEL ANGLES
WITH EQUAL LEGS.



STANDARD SECTIONS
STEEL ANGLES
WITH UNEQUAL LEGS

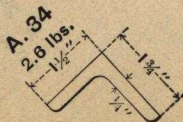
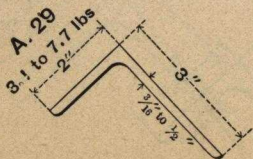
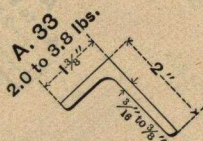
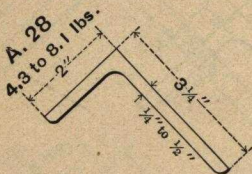
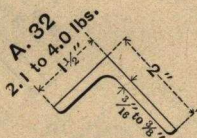
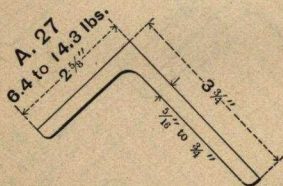
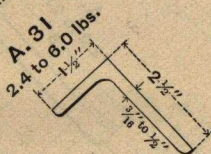
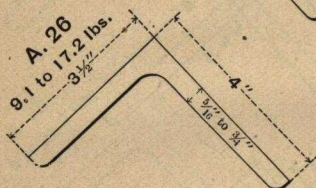
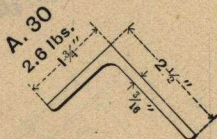
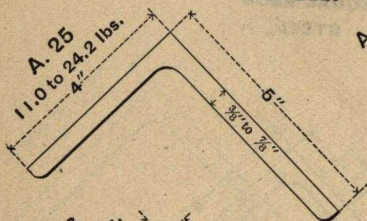


SPECIAL SECTIONS OF ANGLES
MADE TO ORDER
EQUAL LEGS
STEEL.



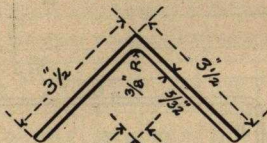
DEARBORN FOUNDRY COMPANY.

SPECIAL SECTIONS OF ANGLES MADE TO ORDER UNEQUAL LEGS STEEL.



EQUAL LEGGED ANGLES.
SPECIAL LIGHT SECTIONS
STEEL.

A 35



$3\frac{7}{10}$ lbs.
per ft.

A 36



$3\frac{4}{10}$ lbs.
per ft.

A 37



$2\frac{6}{10}$ lbs.
per ft.

A 38



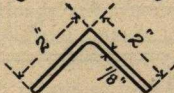
$2\frac{4}{10}$ lbs.
per ft.

A 39



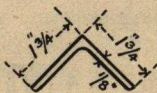
$2\frac{1}{10}$ lbs.
per ft.

A 40



$1\frac{7}{10}$ lbs.
per ft.

A 41



$1\frac{4}{10}$ lbs.
per ft.

A 42



$1\frac{2}{10}$ lbs.
per ft.

A 43

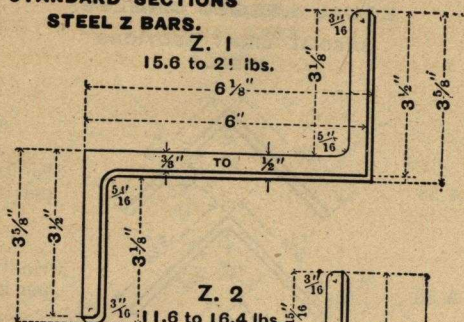


1 lb.
per ft.

**STANDARD SECTIONS
STEEL Z BARS.**

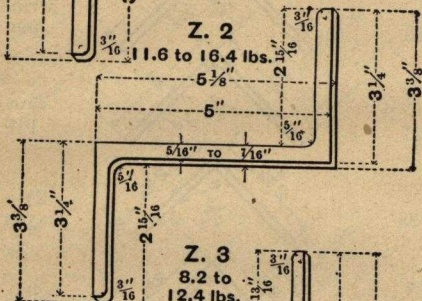
Z. 1

15.6 to 21 lbs.



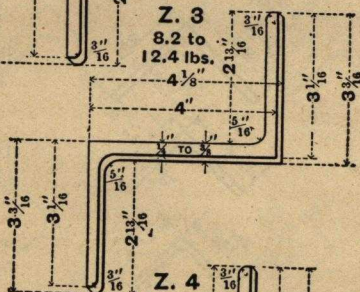
Z. 2

11.6 to 16.4 lbs.



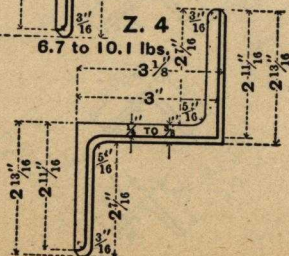
Z. 3

8.2 to 12.4 lbs.



Z. 4

6.7 to 10.1 lbs.



**DEFLECTION COEFFICIENTS FOR DIFFERENT
SHAPES GIVEN IN 64THS OF AN INCH.**

Coeffi- cient Index.	DISTANCE BETWEEN SUPPORTS IN FEET.								
	6	8	10	12	14	16	18	20	22
C	38.0	68.0	106.0	152.5	208.0	271.0	343.0	424.0	513.0
C'	30.0	53.0	83.0	119.0	162.0	212.0	268.0	331.0	400.5
	DISTANCE BETWEEN SUPPORTS IN FEET.								
	24	26	28	30	32	34	36	38	40
C	610.0	716.0	830.5	953.0	1085.0	1225.0	1373.0	1530.0	1695.0
C'	477.0	559.0	649.0	748.0	847.0	957.0	1073.0	1195.0	1324.0

The figures given opposite C and C' are the Deflection Coefficients for steel shapes subject to transverse strain for varying spans, under their maximum uniformly distributed safe loads, derived from a fiber strain of 16,000 and 12,500 respectively, the modulus of elasticity being taken at 29,000,000.

To find the deflection of any symmetrical shape used as a beam, under its corresponding safe load, divide the coefficients given in the above tables by the depth of the beam. This applies to such shapes as beams, channels, etc. For those shapes having unsymmetrical axes, such as tees, angles, etc., divide by twice the greatest distance of the neutral axis from the outside fiber.

Example:—Required the deflection of a 10-inch beam, 25 lbs. per foot, 20-foot span, under its maximum uniformly distributed safe load of 6.51 tons as given on page 38. The above tables give 424.0 as the deflection coefficient; dividing this by 10 gives 42 as the required deflection in 64ths of an inch. For deflections due to different systems of loading, see page 95.

DEARBORN FOUNDRY COMPANY.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	24 INCH BEAM, STANDARD.					
	100 lbs.	95 lbs.	90 lbs.	85 lbs.	80 lbs.	Def. in Ins.
10	105.32	102.18	99.04	95.90	92.76	.07
11	95.74	92.89	90.04	87.18	84.33	.09
12	87.76	85.15	82.53	79.92	77.30	.10
13	81.01	78.60	76.18	73.77	71.36	.12
14	75.23	72.99	70.74	68.50	66.26	.14
15	70.21	68.12	66.03	63.93	61.84	.16
16	65.82	63.86	61.90	59.90	57.97	.18
17	61.95	60.10	58.26	56.41	54.57	.21
18	58.51	56.76	55.02	53.28	51.53	.23
19	55.42	53.78	52.13	50.47	48.82	.26
20	52.66	51.09	49.52	47.95	46.38	.29
21	50.15	48.66	47.16	45.67	44.17	.31
22	47.87	46.44	45.02	43.59	42.16	.35
23	45.79	44.43	43.06	41.69	40.33	.38
24	43.88	42.57	41.27	39.96	38.65	.41
25	42.13	40.87	39.62	38.36	37.11	.45
26	40.51	39.30	38.09	36.88	35.68	.48
27	39.01	37.84	36.68	35.52	34.36	.52
28	37.61	36.49	35.37	34.25	33.13	.56
29	36.31	35.23	34.15	33.07	31.99	.60
30	35.11	34.06	33.01	31.97	30.92	.64
31	33.97	32.96	31.95	30.94	29.92	.69
32	32.91	31.93	30.95	29.97	28.98	.73
33	31.91	30.96	30.01	29.06	28.11	.78
34	30.98	30.05	29.13	28.20	27.28	
35	30.09	29.19	28.30	27.40	26.50	
36	29.25	28.38	27.51	26.64	25.76	

Safe load includes weight of Beam. Maximum fiber strain of 16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	20 INCH BEAM, HEAVY SECTION.					
	100 lbs.	95 lbs.	90 lbs.	85 lbs.	80 lbs.	Def. in Ins.
10	88.66	86.05	83.43	80.82	78.21	.09
11	80.59	78.22	75.84	73.47	71.10	.10
12	73.88	71.70	69.53	67.35	65.17	.12
13	68.20	66.19	64.18	62.17	60.16	.14
14	63.33	61.46	59.59	57.73	55.86	.17
15	59.11	57.36	55.62	53.88	52.14	.19
16	55.41	53.78	52.15	50.51	48.88	.22
17	52.15	50.61	49.08	47.54	46.00	.25
18	49.25	47.80	46.35	44.90	43.45	.28
19	46.66	45.29	43.91	42.54	41.16	.31
20	44.33	43.02	41.72	40.41	39.10	.34
21	42.22	40.97	39.70	38.49	37.24	.38
22	40.30	39.11	37.93	36.74	35.55	.41
23	38.55	37.41	36.28	35.14	34.00	.45
24	36.94	35.85	34.76	33.68	32.59	.49
25	35.46	34.42	33.37	32.33	31.28	.54
26	34.10	33.09	32.09	31.08	30.08	.58
27	32.83	31.87	30.90	29.93	28.97	.62
28	31.66	30.73	29.80	28.87	27.93	.67
29	30.57	29.67	28.77	27.87	26.97	.72
30	29.55	28.68	27.81	26.94	26.07	.77
31	28.60	27.76	26.91	26.07	25.23	.82
32	27.70	26.89	26.07	25.25	24.44	.88
33	26.86	26.07	25.31	24.49	23.70	.93
34	26.07	25.31	24.52	23.77	23.00	
35	25.33	24.58	23.84	23.09	22.33	
36	24.63	23.90	23.18	22.45	21.72	

Safe load includes weight of Beam. Maximum fiber strain of
16,000 lbs. per square inch.

DEARBORN FOUNDRY COMPANY.

SAF LOADS, UNIFORMLY DISTRIBUTED, FOR STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between support	20 INCH BEAM, STANDARD.			
	75 lbs.	70 lbs.	65 lbs.	Def in Ins.
10	68.13	65.51	62.90	.09
11	61.93	59.56	57.18	.10
12	56.82	54.59	52.41	.12
13	52.40	50.39	48.38	.14
14	48.66	46.79	44.93	.17
15	45.42	43.67	41.93	.19
16	42.58	40.94	39.31	.22
17	40.07	38.54	37.00	.25
18	37.85	36.40	34.94	.28
19	35.86	34.48	33.10	.31
20	34.06	32.76	31.45	.34
21	32.44	31.20	29.95	.38
22	30.97	29.78	28.59	.41
23	29.62	28.48	27.35	.45
24	28.41	27.29	26.21	.49
25	27.25	26.20	25.16	.54
26	26.20	25.19	24.19	.58
27	25.23	24.26	23.29	.62
28	24.33	23.45	22.46	.67
29	23.49	22.59	21.69	.72
30	22.71	21.83	20.97	.77
31	21.98	21.13	20.29	.82
32	21.29	20.47	19.66	.88
33	20.64	19.85	19.06	.93
34	20.04	19.27	18.50	
35	19.46	18.72	17.97	
36	18.94	18.20	17.47	

Safe load includes weight of Beam. Maximum fiber strain of 16,000 lbs. per square inch.

DEARBORN FOUNDRY COMPANY.

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SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	18 INCH BEAM, STANDARD.				
	70 lbs.	65 lbs.	60 lbs.	55 lbs.	Def. in Ins.
10	54.52	52.16	49.80	47.06	.10
11	49.56	47.42	45.27	42.78	.12
12	45.43	43.47	41.50	39.22	.14
13	41.94	40.12	38.30	36.20	.16
14	38.94	37.26	35.57	33.62	.19
15	36.34	34.77	33.20	31.38	.21
16	34.07	32.60	31.12	29.42	.24
17	32.07	30.68	29.29	27.68	.28
18	30.29	28.98	27.66	26.14	.31
19	28.70	27.46	26.21	24.77	.34
20	27.26	26.08	24.90	23.53	.38
21	25.97	24.84	23.71	22.41	.42
22	24.78	23.71	22.63	21.39	.46
23	23.70	22.68	21.65	20.46	.50
24	22.71	21.73	20.75	19.61	.55
25	21.81	20.86	19.92	18.82	.60
26	20.97	20.06	19.15	18.10	.64
27	20.19	19.32	18.44	17.43	.69
28	19.47	18.63	17.78	16.81	.75
29	18.80	17.99	17.17	16.23	.80
30	18.17	17.39	16.60	15.69	.86
31	17.58	16.83	16.06	15.18	.92
32	17.04	16.30	15.56	14.71	.98
33	16.52	15.81	15.09	14.27	1.04
34	16.03	15.34	14.65	13.84	
35	15.58	14.91	14.23	13.45	
36	15.14	14.49	13.83	13.07	

Safe load includes weight of Beam. Maximum fiber strain of 16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	15 INCH BEAM, HEAVY SECTION.					
	100 lbs.	95 lbs.	90 lbs.	85 lbs.	80 lbs.	Def. in Ins.
10	63.96	62.00	60.04	58.08	56.11	.11
11	58.14	56.36	54.58	52.80	51.01	.14
12	53.30	51.66	50.03	48.40	46.76	.16
13	49.20	47.69	46.18	44.67	43.17	.19
14	45.68	44.28	42.88	41.48	40.08	.22
15	42.64	41.33	40.02	38.72	37.41	.26
16	39.97	38.75	37.52	36.30	35.07	.29
17	37.62	36.47	35.32	34.16	33.01	.33
18	35.53	34.44	33.35	32.26	31.17	.37
19	33.66	32.63	31.60	30.57	29.52	.41
20	31.98	31.00	30.02	29.04	28.06	.46
21	30.45	29.52	28.59	27.66	26.73	.50
22	29.07	28.18	27.29	26.40	25.51	.55
23	27.81	26.96	26.10	25.25	24.40	.60
24	26.65	25.83	25.01	24.20	23.38	.66
25	25.58	24.80	24.01	23.23	22.45	.71
26	24.60	23.84	23.09	22.34	21.58	.77
27	23.69	22.96	22.24	21.51	20.78	.83
28	22.84	22.14	21.44	20.74	20.04	.90
29	22.05	21.38	20.70	20.03	19.35	.96
30	21.32	20.67	20.01	19.36	18.70	1.03
31	20.63	20.00	19.37	18.73	18.10	1.10
32	19.99	19.37	18.76	18.15	17.54	1.17
33	19.38	18.79	18.19	17.60	17.00	1.24
34	18.81	18.23	17.66	17.08	16.50	
35	18.27	17.71	17.15	16.59	16.03	
36	17.76	17.22	16.68	16.13	15.59	

Safe load includes weight of Beam. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	15 INCH BEAM, LIGHT SECTION.					
	80 lbs.	75 lbs.	70 lbs.	65 lbs.	60 lbs.	Def. in Ins.
10	51.15	49.19	47.23	45.27	43.31	.11
11	46.50	44.72	42.93	41.15	39.37	.14
12	42.62	40.99	39.36	37.72	36.09	.16
13	39.35	37.84	36.33	34.82	33.31	.19
14	36.54	35.13	33.73	32.33	30.93	.22
15	34.10	32.79	31.49	30.18	28.87	.26
16	31.97	30.74	29.52	28.29	27.07	.29
17	30.09	28.93	27.78	26.63	25.47	.33
18	28.42	27.33	26.24	25.15	24.06	.37
19	26.92	25.89	24.86	23.82	22.79	.41
20	25.57	24.59	23.61	22.63	21.65	.46
21	24.36	23.42	22.49	21.56	20.62	.50
22	23.25	22.36	21.47	20.58	19.69	.55
23	22.24	21.39	20.53	19.68	18.83	.60
24	21.31	20.50	19.68	18.86	18.04	.66
25	20.46	19.68	18.89	18.11	17.32	.71
26	19.67	18.92	18.16	17.41	16.66	.77
27	18.95	18.22	17.49	16.77	16.04	.83
28	18.27	17.57	16.87	16.17	15.47	.90
29	17.64	16.96	16.29	15.61	14.93	.96
30	17.05	16.40	15.74	15.09	14.44	1.03
31	16.50	15.87	15.23	14.60	13.97	1.10
32	15.98	15.37	14.76	14.14	13.53	1.17
33	15.50	14.91	14.31	13.72	13.12	1.24
34	15.04	14.47	13.89	13.31	12.74	
35	14.61	14.05	13.49	12.93	12.36	
36	14.21	13.66	13.12	12.57	12.03	

Safe load includes weight of Beam. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	15 INCH BEAM, STANDARD.				
	55 lbs.	50 lbs.	45 lbs.	42 lbs.	Def. in Ins.
10	36.52	34.55	32.59	31.41	.11
11	33.19	31.41	29.63	28.56	.14
12	30.42	28.79	27.16	26.18	.16
13	28.08	26.58	25.07	24.16	.19
14	26.08	24.68	23.28	22.44	.22
15	24.34	23.03	21.73	20.94	.26
16	22.82	21.59	20.37	19.63	.29
17	21.49	20.32	19.17	18.48	.33
18	20.28	19.19	18.10	17.45	.37
19	19.21	18.18	17.15	16.53	.41
20	18.26	17.26	16.29	15.71	.46
21	17.38	16.45	15.52	14.96	.50
22	16.59	15.70	14.81	14.28	.55
23	15.87	15.02	14.17	13.66	.60
24	15.21	14.40	13.58	13.09	.66
25	14.60	13.82	13.04	12.56	.71
26	14.04	13.29	12.53	12.08	.77
27	13.52	12.80	12.07	11.63	.83
28	13.04	12.34	11.64	11.22	.90
29	12.59	11.91	11.24	10.83	.96
30	12.17	11.52	10.86	10.47	1.03
31	11.78	11.14	10.51	10.13	1.10
32	11.41	10.80	10.18	9.82	1.17
33	11.06	10.47	9.88	9.52	1.24
34	10.74	10.16	9.58	9.24	
35	10.43	9.87	9.31	8.97	
36	10.14	9.60	9.05	8.73	

Safe load includes weight of Beam. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL BEAMS.

IN TONS OF 2,000 LBS.

Dis. in ft. bet. supports.	12 INCH BEAM, SPECIAL SECTION.					12 INCH BEAM, STANDARD.		
	60 lbs.	55 lbs.	50 lbs.	45 lbs.	40 lbs.	35 lbs.	31½ lbs.	Def. in. Ins.
10	30.18	28.61	27.04	25.48	23.91	20.28	19.18	.14
11	27.44	26.01	24.58	23.16	21.73	18.44	17.44	.17
12	25.14	23.84	22.54	21.23	19.92	16.90	15.99	.21
13	23.22	22.01	20.80	19.60	18.39	15.60	14.76	.24
14	21.56	20.44	19.32	18.20	17.08	14.49	13.70	.28
15	20.13	19.08	18.03	16.98	15.94	13.52	12.79	.32
16	18.86	17.88	16.90	15.92	14.94	12.68	11.99	.37
17	17.75	16.83	15.91	14.99	14.06	11.93	11.28	.41
18	16.78	15.90	15.02	14.15	13.28	11.27	10.66	.46
19	15.89	15.06	14.23	13.41	12.58	10.62	10.10	.52
20	15.10	14.31	13.52	12.74	11.95	10.14	9.59	.57
21	14.38	13.63	12.88	12.13	11.38	9.66	9.14	.63
22	13.73	13.01	12.29	11.58	10.87	9.22	8.72	.69
23	13.12	12.44	11.76	11.08	10.39	8.82	8.34	.76
24	12.57	11.92	11.27	10.61	9.96	8.45	7.99	.82
25	12.08	11.45	10.82	10.19	9.56	8.11	7.67	.89
26	11.62	11.01	10.40	9.80	9.19	7.80	7.38	.97
27	11.18	10.60	10.02	9.43	8.85	7.51	7.10	1.04
28	10.78	10.22	9.66	9.10	8.54	7.24	6.85	1.12
29	10.41	9.87	9.33	8.78	8.24	6.99	6.62	1.20
30	10.07	9.54	9.01	8.48	7.97	6.76	6.39	1.29
31	9.74	9.23	8.72	8.21	7.71	6.54	6.19	1.37
32	9.43	8.94	8.45	7.96	7.47	6.34	5.99	
33	9.15	8.67	8.19	7.72	7.24	6.15	5.81	
34	8.89	8.42	7.95	7.49	7.03	5.97	5.64	
35	8.62	8.17	7.72	7.28	6.83	5.79	5.48	
36	8.39	7.95	7.51	7.08	6.64	5.63	5.33	

Safe load includes weight of Beam. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR STEEL BEAMS.

IN TONS OF 2,000 LBS.

Dist. in ft. bet. supports.	10 INCH BEAM, STANDARD.					9 INCH BEAM, STANDARD.				
	40 lbs.	35 lbs.	30 lbs.	25 lbs.	Def. in Ins.	35 lbs.	30 lbs.	25 lbs.	21 lbs.	Def. in Ins.
10	16.94	15.64	14.33	13.02	.17	13.35	12.18	11.00	10.06	.19
11	15.40	14.22	13.03	11.85	.21	12.14	11.07	10.00	9.15	.23
12	14.12	13.03	11.94	10.85	.25	11.12	10.15	9.17	8.39	.27
13	13.03	12.03	11.02	10.02	.29	10.27	9.36	8.46	7.74	.32
14	12.10	11.17	10.24	9.30	.34	9.53	8.70	7.86	7.19	.37
15	11.30	10.42	9.55	8.68	.39	8.90	8.12	7.34	6.71	.43
16	10.59	9.77	8.96	8.14	.45	8.34	7.61	6.88	6.29	.49
17	9.97	9.20	8.43	7.66	.50	7.85	7.16	6.47	5.92	.55
18	9.41	8.69	7.96	7.24	.56	7.42	6.76	6.11	5.60	.62
19	8.92	8.23	7.54	6.85	.62	7.03	6.41	5.79	5.30	.69
20	8.47	7.82	7.16	6.51	.69	6.67	6.09	5.50	5.03	.76
21	8.07	7.45	6.82	6.20	.76	6.36	5.80	5.24	4.79	.84
22	7.71	7.11	6.51	5.92	.83	6.07	5.53	5.00	4.57	.92
23	7.37	6.80	6.23	5.66	.91	5.80	5.29	4.78	4.36	1.01
24	7.06	6.52	5.97	5.43	.99	5.56	5.07	4.58	4.19	1.10
25	6.78	6.25	5.73	5.21	1.07	5.34	4.87	4.40	4.02	1.19
26	6.52	6.01	5.51	5.01	1.16	5.13	4.68	4.23	3.87	1.29
27	6.27	5.79	5.31	4.82	1.25	4.94	4.51	4.07	3.73	1.39
28	6.05	5.58	5.12	4.65	1.34	4.77	4.35	3.93	3.59	1.49
29	5.83	5.39	4.94	4.49	1.44	4.60	4.20	3.79	3.47	1.60
30	5.65	5.21	4.77	4.34	1.54	4.45	4.06	3.67	3.35	
31	5.46	5.04	4.62	4.20	1.65					
32	5.29	4.89	4.48	4.07						
33	5.13	4.74	4.34	3.95						
34	4.98	4.60	4.21	3.83						
35	4.84	4.47	4.09	3.72						
36	4.71	4.34	3.98	3.62						

Safe load includes weight of Beam. Maximum fiber strain of 16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	8 INCH BEAM, STANDARD.					7 INCH BEAM, STANDARD.			
	25½ lbs.	23 lbs.	20½ lbs.	18 lbs.	Def. in Ins.	20 lbs.	17½ lbs.	15 lbs.	Def. in Ins.
5	18.31	17.26	16.21	15.17		12.87	11.95	11.04	
6	15.26	14.38	13.51	12.64	.08	10.73	9.96	9.20	.09
7	13.08	12.33	11.58	10.83	.10	9.19	8.53	7.89	.12
8	11.44	10.79	10.13	9.48	.14	8.04	7.47	6.90	.16
9	10.17	9.59	9.01	8.43	.17	7.15	6.64	6.13	.20
10	9.15	8.63	8.11	7.58	.21	6.44	5.98	5.52	.24
11	8.32	7.85	7.37	6.89	.26	5.85	5.43	5.02	.30
12	7.63	7.19	6.76	6.32	.31	5.36	4.98	4.60	.35
13	7.04	6.64	6.24	5.83	.36	4.95	4.60	4.25	.41
14	6.54	6.16	5.79	5.42	.42	4.60	4.26	3.94	.48
15	6.10	5.75	5.40	5.06	.48	4.29	3.99	3.68	.55
16	5.72	5.39	5.07	4.74	.55	4.02	3.74	3.45	.63
17	5.38	5.08	4.76	4.46	.62	3.79	3.52	3.25	.71
18	5.08	4.79	4.50	4.21	.69	3.57	3.32	3.07	.79
19	4.82	4.54	4.27	3.99	.77	3.37	3.15	2.91	.88
20	4.58	4.32	4.05	3.79	.86	3.22	2.99	2.76	.98
21	4.36	4.11	3.86	3.61	.94	3.06	2.84	2.63	1.08
22	4.16	3.92	3.68	3.45	1.04	2.93	2.71	2.51	1.19
23	3.98	3.75	3.52	3.30	1.13	2.80	2.60	2.40	1.30
24	3.81	3.60	3.38	3.16	1.23	2.68	2.49	2.30	1.41
25	3.66	3.45	3.24	3.03	1.34	2.57	2.39	2.21	1.53

Safe load includes weight of Beam. Maximum fiber strain of 16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	6 INCH BEAM, STANDARD.				5 INCH BEAM, STANDARD.			
	17½ lbs.	14½ lbs.	12½ lbs.	Def. in ins.	14½ lbs.	12½ lbs.	9½ lbs.	Def. in ins.
5	9.31	8.53	7.74		6.47	5.81	5.16	.09
6	7.76	7.11	6.45	.10	5.39	4.84	4.30	.12
7	6.65	6.09	5.53	.14	4.62	4.15	3.68	.17
8	5.82	5.33	4.84	.18	4.04	3.63	3.22	.22
9	5.17	4.74	4.30	.23	3.59	3.23	2.87	.28
10	4.66	4.26	3.87	.29	3.23	2.91	2.58	.34
11	4.23	3.88	3.52	.35	2.94	2.64	2.34	.41
12	3.88	3.55	3.23	.41	2.69	2.42	2.15	.49
13	3.58	3.28	2.98	.48	2.49	2.24	1.98	.58
14	3.33	3.05	2.77	.56	2.31	2.08	1.84	.67
15	3.10	2.84	2.58	.64	2.16	1.94	1.72	.77
16	2.91	2.66	2.42	.73	2.02	1.82	1.61	.88
17	2.74	2.51	2.28	.83	1.90	1.71	1.52	.99
18	2.59	2.37	2.15	.93	1.80	1.61	1.43	1.11
19	2.45	2.24	2.04	1.03	1.70	1.53	1.36	1.24
20	2.33	2.13	1.93	1.14	1.62	1.45	1.29	1.37
21	2.22	2.03	1.84	1.26	1.54	1.38	1.23	1.51
22	2.12	1.94	1.76	1.38	1.47	1.32	1.17	1.66

Safe load includes weight of Beam. Maximum fiber strain of 16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL BEAMS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	4 INCH BEAM, STANDARD.					3 INCH BEAM, STANDARD.			
	10½ lbs.	9½ lbs.	8½ lbs.	7½ lbs.	Def. in Ins.	7½ lbs.	6½ lbs.	5½ lbs.	Def. in Ins.
5	3.81	3.60	3.39	3.18	.11	2.08	1.92	1.76	.14
6	3.17	3.00	2.82	2.65	.15	1.73	1.60	1.47	.21
7	2.72	2.57	2.42	2.27	.21	1.49	1.39	1.26	.28
8	2.38	2.25	2.12	1.99	.27	1.30	1.20	1.10	.37
9	2.12	2.00	1.88	1.77	.35	1.16	1.07	.98	.46
10	1.90	1.80	1.70	1.59	.43	1.04	.96	.88	.57
11	1.73	1.64	1.54	1.45	.52	.95	.87	.80	.69
12	1.59	1.50	1.41	1.33	.62	.87	.80	.73	.82
13	1.46	1.39	1.30	1.22	.72	.80	.74	.68	.97
14	1.36	1.29	1.21	1.14	.84	.74	.69	.63	1.12
15	1.27	1.20	1.13	1.06	.96	.69	.64	.59	1.29
16	1.19	1.12	1.06	.99		.65	.60	.55	
17	1.12	1.06	1.00	.94		.61	.56	.52	
18	1.06	1.00	.94	.88		.58	.53	.49	
19	1.00	.95	.89	.82		.55	.50	.46	
20	.95	.90	.85	.79		.52	.48	.44	
21	.91	.86	.81	.75		.50	.46	.42	
22	.88	.82	.77	.72		.48	.44	.40	

Safe load includes weight of beam. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL CHANNELS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	15 INCH CHANNEL, STANDARD.					
	55 lbs.	50 lbs.	45 lbs.	40 lbs.	35 lbs.	33 lbs.
10	30.85	28.80	26.93	24.97	23.01	22.22
11	28.05	26.27	24.48	22.70	20.92	20.20
12	25.71	24.08	22.44	20.81	19.17	18.52
13	23.73	22.22	20.72	19.21	17.70	17.10
14	22.04	20.64	19.24	17.84	16.44	15.87
15	20.57	19.26	17.96	16.65	15.34	14.82
16	19.28	18.06	16.83	15.61	14.38	13.89
17	18.15	16.99	15.84	14.69	13.53	13.07
18	17.14	16.05	14.96	13.87	12.78	12.35
19	16.24	15.21	14.17	13.14	12.11	11.69
20	15.43	14.45	13.47	12.48	11.50	11.11
21	14.69	13.76	12.82	11.89	10.96	10.58
22	14.02	13.13	12.24	11.35	10.46	10.10
23	13.41	12.56	11.71	10.86	10.00	9.66
24	12.86	12.04	11.22	10.40	9.59	9.26
25	12.34	11.56	10.77	9.99	9.20	8.89
26	11.87	11.11	10.36	9.60	8.85	8.55
27	11.43	10.70	9.97	9.25	8.52	8.23
28	11.02	10.32	9.62	8.92	8.22	7.94
29	10.64	9.96	9.29	8.61	7.93	7.66
30	10.28	9.63	8.98	8.32	7.67	7.41

Safe load includes weight of Channel. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL CHANNELS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	12 INCH CHANNELS, STANDARD.				
	40 lbs.	35 lbs.	30 lbs.	25 lbs.	20½ lbs.
10	17.50	15.93	14.36	12.80	11.38
11	15.91	14.49	13.06	11.64	10.35
12	14.59	13.28	11.97	10.67	9.48
13	13.46	12.25	11.05	9.85	8.76
14	12.50	11.38	10.26	9.14	8.13
15	11.67	10.62	9.58	8.53	7.59
16	10.94	9.96	8.98	8.00	7.12
17	10.30	9.37	8.45	7.53	6.69
18	9.72	8.85	7.98	7.11	6.33
19	9.21	8.39	7.56	6.74	5.99
20	8.75	7.97	7.18	6.40	5.69
21	8.34	7.59	6.84	6.09	5.42
22	7.96	7.24	6.53	5.82	5.18
23	7.61	6.93	6.25	5.56	4.95
24	7.29	6.64	5.99	5.33	4.74
25	7.00	6.37	5.75	5.12	4.55
26	6.73	6.13	5.53	4.92	4.38
27	6.48	5.90	5.32	4.74	4.22
28	6.25	5.69	5.13	4.57	4.07
29	6.04	5.49	4.95	4.41	3.92
30	5.83	5.31	4.79	4.27	3.79

Safe load includes weight of Channel. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL CHANNELS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	10 INCH CHANNELS, STANDARD.				
	35 lbs.	30 lbs.	25 lbs.	20 lbs.	15 lbs.
10	12.36	11.06	9.75	8.44	7.13
11	11.24	10.05	8.86	7.67	6.49
12	10.30	9.21	8.12	7.03	5.94
13	9.51	8.50	7.50	6.49	5.49
14	8.83	7.90	6.96	6.03	5.10
15	8.24	7.37	6.50	5.63	4.75
16	7.73	6.91	6.09	5.28	4.46
17	7.27	6.50	5.73	4.97	4.20
18	6.87	6.14	5.42	4.69	3.96
19	6.51	5.82	5.14	4.44	3.75
20	6.18	5.53	4.87	4.22	3.57
21	5.89	5.26	4.64	4.02	3.44
22	5.62	5.03	4.42	3.84	3.24
23	5.37	4.81	4.24	3.67	3.10
24	5.15	4.61	4.06	3.52	2.97
25	4.95	4.42	3.90	3.38	2.85
26	4.75	4.25	3.75	3.25	2.74
27	4.58	4.09	3.61	3.13	2.64
28	4.41	3.95	3.48	3.01	2.55
29	4.26	3.81	3.36	2.91	2.46
30	4.12	3.69	3.25	2.81	2.38

Safe load includes weight of Channel. Maximum fiber strain of 16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL CHANNELS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	9 INCH CHANNEL, STANDARD.			
	25 lbs.	20 lbs.	15 lbs.	13¼ lbs.
10	8.37	7.20	6.02	5.61
11	7.61	6.54	5.47	5.10
12	6.98	6.00	5.02	4.67
13	6.44	5.54	4.63	4.31
14	5.98	5.14	4.30	4.01
15	5.58	4.80	4.01	3.74
16	5.23	4.50	3.76	3.51
17	4.92	4.23	3.54	3.30
18	4.65	4.00	3.34	3.12
19	4.41	3.79	3.17	2.95
20	4.19	3.60	3.01	2.80
21	3.99	3.43	2.87	2.67
22	3.81	3.27	2.74	2.55
23	3.64	3.13	2.62	2.44
24	3.49	3.00	2.51	2.34
25	3.35	2.88	2.41	2.24
26	3.22	2.77	2.32	2.16
27	3.10	2.67	2.23	2.08
28	2.99	2.57	2.15	2.01
29	2.89	2.48	2.08	1.93
30	2.79	2.40	2.01	1.87

Safe load includes weight of Channel. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL CHANNELS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	8 INCH CHANNEL, STANDARD.				
	21¼ lbs.	18¼ lbs.	16¼ lbs.	13¼ lbs.	11¼ lbs.
10	6.40	5.88	5.35	4.83	4.32
11	5.82	5.34	4.87	4.39	3.93
12	5.33	4.90	4.46	4.03	3.60
13	4.92	4.52	4.12	3.72	3.32
14	4.57	4.20	3.82	3.45	3.08
15	4.27	3.92	3.57	3.22	2.88
16	4.00	3.67	3.35	3.02	2.70
17	3.76	2.46	3.15	2.84	2.54
18	3.56	3.28	2.97	2.68	2.40
19	3.37	3.09	2.82	2.54	2.27
20	3.20	2.94	2.68	2.42	2.16
21	3.05	2.80	2.55	2.30	2.06
22	2.91	2.67	2.44	2.20	1.96
23	2.78	2.56	2.33	2.10	1.88
24	2.67	2.45	2.23	2.01	1.80
25	2.56	2.35	2.14	1.93	1.73
26	2.46	2.26	2.06	1.86	1.66
27	2.37	2.18	1.98	1.79	1.60
28	2.28	2.10	1.91	1.72	1.54
29	2.21	2.03	1.85	1.67	1.49
30	2.13	1.96	1.78	1.61	1.42

Safe load includes weight of Channel. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL CHANNELS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	7 INCH CHANNEL, STANDARD.				
	19½ lbs.	17½ lbs.	14½ lbs.	12½ lbs.	9½ lbs.
5	10.09	9.17	8.26	7.35	6.43
6	8.41	7.64	6.88	6.12	5.36
7	7.20	6.55	5.90	5.25	4.59
8	6.30	5.73	5.16	4.59	4.02
9	5.61	5.10	4.59	4.08	3.57
10	5.04	4.59	4.13	3.67	3.22
11	4.58	4.17	3.75	3.34	2.92
12	4.20	3.82	3.44	3.06	2.68
13	3.88	3.53	3.18	2.82	2.47
14	3.60	3.27	2.95	2.62	2.29
15	3.36	3.06	2.75	2.45	2.14
16	3.15	2.86	2.58	2.29	2.01
17	2.97	2.70	2.43	2.16	1.89
18	2.80	2.55	2.29	2.04	1.78
19	2.64	2.42	2.17	1.93	1.69
20	2.52	2.29	2.06	1.84	1.61
21	2.40	2.19	1.97	1.75	1.53
22	2.29	2.08	1.87	1.67	1.46
23	2.19	1.99	1.79	1.60	1.40
24	2.10	1.91	1.72	1.53	1.34
25	2.02	1.83	1.65	1.47	1.29

Safe load includes weight of Channel. Maximum fiber strain of
16,000 lbs. per square inch.

SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL CHANNELS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	6 INCH CHANNEL, STANDARD.				5 INCH CHANNEL, STANDARD.		
	15½ lbs.	13 lbs.	10½ lbs.	8 lbs.	11½ lbs.	9 lbs.	6½ lbs.
5	6.97	6.19	5.41	4.62	4.47	3.82	3.16
6	5.81	5.16	4.50	3.85	3.73	3.18	2.64
7	4.98	4.42	3.86	3.30	3.19	2.73	2.26
8	4.36	3.87	3.38	2.89	2.79	2.39	1.98
9	3.87	3.44	3.00	2.57	2.48	2.12	1.76
10	3.49	3.09	2.73	2.31	2.23	1.92	1.58
11	3.17	2.81	2.45	2.10	2.03	1.75	1.44
12	2.91	2.58	2.25	1.93	1.86	1.59	1.32
13	2.68	2.38	2.08	1.78	1.72	1.48	1.22
14	2.49	2.21	1.93	1.65	1.59	1.36	1.13
15	2.32	2.06	1.80	1.54	1.49	1.27	1.05
16	2.18	1.93	1.69	1.44	1.39	1.19	.99
17	2.05	1.82	1.59	1.36	1.31	1.13	.93
18	1.93	1.72	1.50	1.28	1.24	1.06	.88
19	1.84	1.62	1.42	1.22	1.17	1.01	.83
20	1.74	1.55	1.35	1.15	1.11	.96	.79
21	1.66	1.47	1.29	1.10	1.06	.91	.75
22	1.58	1.40	1.22	1.05	1.01	.87	.72
23	1.52	1.35	1.17	1.00	.97	.83	.69
24	1.45	1.29	1.12	.96	.93	.79	.66
25	1.39	1.24	1.08	.92	.89	.76	.63

Safe load includes weight of Channel. Maximum fiber strain of 16,000 lbs. per square inch.

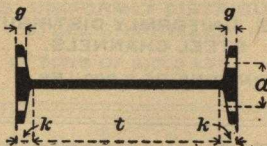
SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL CHANNELS.

IN TONS OF 2,000 LBS.

Distance in feet between supports.	4 INCH CHANNEL, STANDARD.			3 INCH CHANNEL, STANDARD.		
	7¼ lbs.	6¼ lbs.	5¼ lbs.	6 lbs.	5 lbs.	4 lbs.
5	2.44	2.23	2.02	1.48	1.32	1.16
6	2.04	1.86	1.69	1.23	1.10	.97
7	1.74	1.59	1.44	1.06	.94	.83
8	1.53	1.39	1.26	.92	.82	.73
9	1.36	1.24	1.12	.82	.73	.65
10	1.22	1.12	1.01	.74	.66	.58
11	1.11	1.01	.92	.67	.60	.53
12	1.02	.93	.84	.62	.55	.48
13	.94	.86	.78	.57	.51	.45
14	.87	.79	.76	.53	.47	.41
15	.81	.74	.67	.49	.44	.39
16	.76	.69	.63	.46	.41	.36
17	.72	.66	.60	.43	.39	.34
18	.68	.62	.56	.41	.36	.32
19	.64	.59	.53	.39	.35	.31
20	.62	.56	.51	.37	.33	.29
21	.58	.53	.49	.35	.31	.28
22	.55	.50	.46	.33	.30	.26
23	.53	.48	.44	.32	.29	.25
24	.51	.46	.42	.31	.27	.24
25	.49	.45	.40	.29	.26	.23

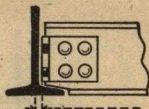
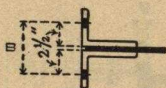
Safe load includes weight of Channel. Maximum fiber strain of
16,000 lbs. per square inch.

STANDARDS.



Depth of Beam Inches	Weight per Foot, Pounds	Flange Inches	Web Inches	Gauge A Inches	Tangt. t Inches	Dist. k Inches	Grip G Inches	Max. Rivet or Bolt, Inches	Wall Bearing Inches	Wall Pth.
24	100.0	7 $\frac{1}{4}$	3 $\frac{1}{4}$	4	20 $\frac{3}{4}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$	16	16 $\times$ 16 in., 73 lbs.
	95.0	7 $\frac{1}{8}$	3 $\frac{1}{8}$	4	20 $\frac{3}{4}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	90.0	7 $\frac{1}{8}$	3 $\frac{1}{8}$	4	20 $\frac{3}{4}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	85.0	7 $\frac{1}{8}$	3 $\frac{1}{8}$	4	20 $\frac{3}{4}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	80.0	7	3 $\frac{1}{2}$	4	20 $\frac{3}{4}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
20	100.0	7 $\frac{3}{8}$	3 $\frac{1}{8}$	4	16 $\frac{1}{2}$	1 $\frac{3}{4}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$	16	16 $\times$ 16 in., 73 lbs.
	95.0	7 $\frac{3}{8}$	3 $\frac{1}{8}$	4	16 $\frac{1}{2}$	1 $\frac{3}{4}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	90.0	7 $\frac{3}{8}$	3 $\frac{1}{8}$	4	16 $\frac{1}{2}$	1 $\frac{3}{4}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	85.0	7 $\frac{3}{8}$	3 $\frac{1}{8}$	4	16 $\frac{1}{2}$	1 $\frac{3}{4}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	80.0	7 $\frac{3}{8}$	3 $\frac{1}{8}$	4	16 $\frac{1}{2}$	1 $\frac{3}{4}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	75.0	6 $\frac{1}{2}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	17	1 $\frac{1}{2}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	70.0	6 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	17	1 $\frac{1}{2}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
18	65.0	6 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	17	1 $\frac{1}{2}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$	16	16 $\times$ 16 in., 73 lbs.
	70.0	6 $\frac{1}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{4}$	15 $\frac{1}{4}$	1 $\frac{3}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	65.0	6 $\frac{1}{4}$	3 $\frac{1}{4}$	3 $\frac{1}{4}$	15 $\frac{1}{4}$	1 $\frac{3}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	60.0	6 $\frac{3}{8}$	3 $\frac{1}{4}$	3 $\frac{1}{4}$	15 $\frac{1}{4}$	1 $\frac{3}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	55.0	6	3 $\frac{1}{4}$	3 $\frac{1}{4}$	15 $\frac{1}{4}$	1 $\frac{3}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
15	100.0	6 $\frac{5}{8}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	11	2	2 $\frac{1}{8}$	7 $\frac{3}{8}$	12	12 $\times$ 3 $\frac{1}{2}$ $\times$ 16 in., 41 lbs.
	95.0	6 $\frac{3}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	11	2	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	90.0	6 $\frac{3}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	11	2	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	85.0	6 $\frac{3}{4}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	11	2	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	80.0	6 $\frac{1}{2}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	11	2	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	75.0	6 $\frac{1}{2}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	11 $\frac{3}{4}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	70.0	6 $\frac{1}{2}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	11 $\frac{3}{4}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	65.0	6 $\frac{3}{8}$	3 $\frac{3}{4}$	3 $\frac{3}{4}$	11 $\frac{3}{4}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	60.0	6	3 $\frac{3}{4}$	3 $\frac{3}{4}$	11 $\frac{3}{4}$	1 $\frac{5}{8}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	55.0	5 $\frac{3}{4}$	3	3	12 $\frac{1}{2}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	50.0	5 $\frac{1}{2}$	3	3	12 $\frac{1}{2}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	45.0	5 $\frac{1}{2}$	3	3	12 $\frac{1}{2}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		
	42.0	5 $\frac{1}{2}$	3	3	12 $\frac{1}{2}$	1 $\frac{1}{4}$	2 $\frac{1}{8}$	7 $\frac{3}{8}$		

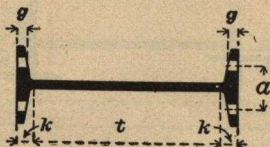
STANDARDS.



$$C = \frac{1}{2} \text{ of Web} + \frac{1}{16} \text{ in.}$$

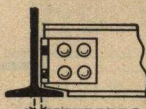
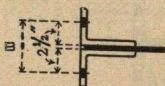
STANDARD FRAMING		Dist. B Inches	Dist. C Inches	Weight per Foot Pounds	Depth of Beam Inches
24" 2-Ls 4x4x$\frac{7}{8}$ in. x 1 ft. - 6 in. Wt. 43 lbs.	18" and 20" 2-Ls 4x4x$\frac{7}{8}$ in. x 1 ft. - 3 in. Wt. 36 lbs.	5 $\frac{3}{4}$	7 $\frac{7}{8}$	100.0	24
		5 $\frac{11}{16}$	7 $\frac{7}{8}$	95.0	
		5 $\frac{9}{8}$	3 $\frac{3}{8}$	90.0	
		5 $\frac{9}{16}$	3 $\frac{3}{8}$	85.0	
		5 $\frac{1}{2}$	1 $\frac{5}{8}$	80.0	
		5 $\frac{7}{8}$	1 $\frac{1}{2}$	100.0	
		5 $\frac{13}{16}$	1 $\frac{1}{2}$	95.0	20
		5 $\frac{3}{4}$	7 $\frac{7}{8}$	90.0	
		5 $\frac{11}{16}$	7 $\frac{7}{8}$	85.0	
		5 $\frac{5}{8}$	3 $\frac{3}{8}$	80.0	
		5 $\frac{11}{16}$	7 $\frac{7}{8}$	75.0	
		5 $\frac{9}{16}$	3 $\frac{3}{8}$	70.0	
		5 $\frac{1}{2}$	1 $\frac{5}{8}$	65.0	18
		5 $\frac{3}{4}$	7 $\frac{7}{8}$	70.0	
		5 $\frac{5}{8}$	3 $\frac{3}{8}$	65.0	
		5 $\frac{9}{16}$	3 $\frac{3}{8}$	60.0	
		5 $\frac{1}{2}$	1 $\frac{5}{8}$	55.0	
		6 $\frac{3}{16}$	1 $\frac{11}{16}$	100.0	
		6 $\frac{1}{16}$	5 $\frac{5}{8}$	95.0	15
		6	1 $\frac{9}{16}$	90.0	
		5 $\frac{7}{8}$	1 $\frac{1}{2}$	85.0	
		5 $\frac{13}{16}$	1 $\frac{1}{2}$	80.0	
		5 $\frac{7}{8}$	1 $\frac{1}{2}$	75.0	
		5 $\frac{3}{4}$	7 $\frac{7}{8}$	70.0	
		5 $\frac{11}{16}$	7 $\frac{7}{8}$	65.0	
		5 $\frac{5}{8}$	3 $\frac{3}{8}$	60.0	
		5 $\frac{5}{8}$	3 $\frac{3}{8}$	55.0	
		5 $\frac{9}{16}$	3 $\frac{3}{8}$	50.0	
		5 $\frac{1}{2}$	1 $\frac{5}{8}$	45.0	
		5 $\frac{7}{16}$	1 $\frac{1}{4}$	42.0	

STANDARDS.



Depth of Beam Inches	Weight per Foot, Pounds	Flange, Inches	Web, Inches	Gauge A Inches	Tangent t Inches	Dist. k Inches	Grip G Inches	Max. Rivet or Bolt, Inches	Wall Bearing Inches	Wall Plt.	
12	55.0	5 ¹ / ₄	1 ¹ / ₄	3	9 ¹ / ₄	1 ³ / ₈	2 ¹ / ₈	3 ³ / ₄	12	12 × ³ / ₄ × 12 in. 31 lbs.	
	50.0	5 ¹ / ₄	1 ¹ / ₄	3	9 ¹ / ₄	1 ³ / ₈	2 ¹ / ₈	3 ³ / ₄			
	45.0	5 ¹ / ₄	1 ¹ / ₄	3	9 ¹ / ₄	1 ³ / ₈	2 ¹ / ₈	3 ³ / ₄			
	40.0	5 ¹ / ₄	1 ¹ / ₄	3	9 ¹ / ₄	1 ³ / ₈	2 ¹ / ₈	3 ³ / ₄			
	35.0	5 ³ / ₈	1 ³ / ₈	2 ³ / ₄	9 ³ / ₄	1 ¹ / ₈	2 ¹ / ₈	3 ³ / ₄			
10	31.5	5	1 ¹ / ₄	2 ³ / ₄	9 ³ / ₄	1 ¹ / ₈	2 ¹ / ₈	3 ³ / ₄	8	8 × ⁵ / ₈ × 12 in. 17 lbs.	
	40.0	5 ³ / ₈	³ / ₄	2 ⁵ / ₈	8	1	1 ⁵ / ₈	3 ³ / ₄			
	35.0	4 ¹ / ₂	³ / ₄	2 ⁵ / ₈	8	1	1 ⁵ / ₈	3 ³ / ₄			
	30.0	4 ¹ / ₂	³ / ₄	2 ⁵ / ₈	8	1	1 ⁵ / ₈	3 ³ / ₄			
	25.0	4 ¹ / ₂	³ / ₄	2 ⁵ / ₈	8	1	1 ⁵ / ₈	3 ³ / ₄			
9	35.0	4 ¹ / ₂	³ / ₄	2 ¹ / ₂	7	1	1 ⁷ / ₈	3 ³ / ₄	8	8 × ⁵ / ₈ × 8 in. 12 lbs.	
	30.0	4 ³ / ₈	³ / ₄	2 ¹ / ₂	7	1	1 ⁷ / ₈	3 ³ / ₄			
	25.0	4 ² / ₈	³ / ₄	2 ¹ / ₂	7	1	1 ⁷ / ₈	3 ³ / ₄			
	21.0	4 ² / ₈	³ / ₄	2 ¹ / ₂	7	1	1 ⁷ / ₈	3 ³ / ₄			
	25.5	4 ¹ / ₂	³ / ₄	2 ¹ / ₄	6 ¹ / ₄	⁷ / ₈	1 ³ / ₈	3 ³ / ₄			
8	23.0	4 ¹ / ₂	³ / ₄	2 ¹ / ₄	6 ¹ / ₄	⁷ / ₈	1 ³ / ₈	3 ³ / ₄	8	8 × ⁵ / ₈ × 8 in. 12 lbs.	
	20.5	4 ³ / ₈	³ / ₄	2 ¹ / ₄	6 ¹ / ₄	⁷ / ₈	1 ³ / ₈	3 ³ / ₄			
	18.0	4	³ / ₄	2 ¹ / ₄	6 ¹ / ₄	⁷ / ₈	1 ³ / ₈	3 ³ / ₄			
	20.0	3 ⁷ / ₈	¹ / ₂	2 ¹ / ₄	5 ¹ / ₄	⁷ / ₈	³ / ₈	5 ⁵ / ₈			
	17.5	3 ⁴ / ₈	¹ / ₄	2 ¹ / ₄	5 ¹ / ₄	⁷ / ₈	³ / ₈	5 ⁵ / ₈			
7	15.0	3 ² / ₈	¹ / ₄	2 ¹ / ₄	5 ¹ / ₄	⁷ / ₈	³ / ₈	5 ⁵ / ₈	6	6 × ¹ / ₂ × 6 in. 6 lbs.	
	17.25	3 ³ / ₈	¹ / ₄	2	4 ¹ / ₂	³ / ₄	1 ¹ / ₈	5 ⁵ / ₈			
	14.75	3 ² / ₈	¹ / ₄	2	4 ¹ / ₂	³ / ₄	1 ¹ / ₈	5 ⁵ / ₈			
	12.25	3 ² / ₈	¹ / ₄	2	4 ¹ / ₂	³ / ₄	1 ¹ / ₈	5 ⁵ / ₈			
	14.75	3 ¹ / ₈	¹ / ₂	1 ³ / ₄	3 ¹ / ₂	³ / ₄	⁵ / ₁₆	1 ¹ / ₂			
5	12.25	3 ³ / ₄	¹ / ₂	1 ³ / ₄	3 ¹ / ₂	³ / ₄	⁵ / ₁₆	1 ¹ / ₂	6		
	9.75	3	¹ / ₄	1 ³ / ₄	3 ¹ / ₂	³ / ₄	⁵ / ₁₆	1 ¹ / ₂			
		3	¹ / ₄	1 ³ / ₄	3 ¹ / ₂	³ / ₄	⁵ / ₁₆	1 ¹ / ₂			

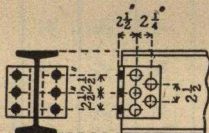
STANDARDS.



$C = \frac{1}{2}$ of Web + $\frac{1}{16}$ in.

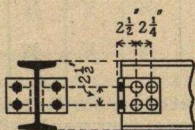
STANDARD FRAMING

12"



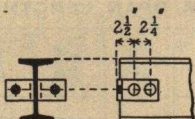
2—Ls 6x4x $\frac{7}{16}$ in. x0 ft.—7 $\frac{1}{2}$ in.
Wt. 23 lbs.

7"
8"
9" and
10"



2—Ls 6x4x $\frac{7}{16}$ in. x0 ft.—5 in.
Wt. 16 lbs.

5"
and
6"



2—Ls 6x4x $\frac{7}{16}$ in. x0 ft.—3 for 6 in.
Wt. 9 lbs.

2—Ls 6x4x $\frac{7}{16}$ in. x0 ft.—2 $\frac{1}{2}$ for 5 in.
Wt. 8 lbs.

Dist. B
Inches

Dist. C
Inches

Weight
per Foot
Pounds

Depth
of Beam
Inches

5 $\frac{13}{16}$
5 $\frac{11}{16}$
5 $\frac{9}{16}$
5 $\frac{1}{2}$
5 $\frac{7}{16}$
5 $\frac{3}{8}$

$\frac{1}{2}$
 $\frac{7}{16}$
 $\frac{3}{8}$
 $\frac{5}{16}$
 $\frac{6}{16}$
 $\frac{1}{4}$

55.0
50.0
45.0
40.0
35.0
31.5

12

5 $\frac{3}{4}$
5 $\frac{5}{8}$
5 $\frac{1}{2}$
5 $\frac{5}{16}$

$\frac{7}{16}$
 $\frac{3}{8}$
 $\frac{5}{16}$
 $\frac{1}{4}$

40.0
35.0
30.0
25.0

10

5 $\frac{3}{4}$
5 $\frac{9}{16}$
5 $\frac{7}{16}$
5 $\frac{5}{16}$

$\frac{7}{16}$
 $\frac{3}{8}$
 $\frac{5}{16}$
 $\frac{1}{4}$

35.0
30.0
25.0
21.0

9

5 $\frac{9}{16}$
5 $\frac{7}{16}$
5 $\frac{3}{8}$
5 $\frac{5}{16}$

$\frac{3}{8}$
 $\frac{5}{16}$
 $\frac{1}{4}$
 $\frac{3}{16}$

25.5
23.0
20.5
18.0

8

5 $\frac{1}{2}$
5 $\frac{3}{8}$
5 $\frac{1}{4}$

$\frac{5}{16}$
 $\frac{1}{4}$
 $\frac{3}{16}$

20.0
17.5
15.0

7

5 $\frac{1}{2}$
5 $\frac{3}{8}$
5 $\frac{1}{4}$

$\frac{5}{16}$
 $\frac{1}{4}$
 $\frac{3}{16}$

17.25
14.75
12.25

6

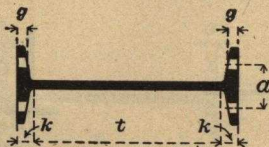
5 $\frac{1}{2}$
5 $\frac{3}{8}$
5 $\frac{1}{4}$

$\frac{5}{16}$
 $\frac{1}{4}$
 $\frac{3}{16}$

14.75
12.25
9 75

5

STANDARDS.



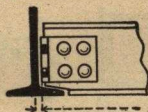
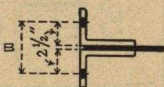
Depth of Beam Inches	Weight per Foot, Pounds	Flange Inches	Web Inches	Gauge A Inches	Tangt. t Inches	Dist. k Inches	Grip G Inches	Max. Rivet or Bolt, Inches	Wall Bearing Inches	Wall Pit.
4	10.5	2 $\frac{7}{8}$	$\frac{13}{16}$	1 $\frac{1}{2}$	2 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{9}{32}$	$\frac{1}{2}$	6	6 $\times$ $\frac{1}{2}$ $\times$ 6 in. 5 lbs.
	9.5	2 $\frac{13}{16}$	$\frac{11}{16}$	1 $\frac{1}{2}$	2 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{9}{32}$	$\frac{1}{2}$		
	8.5	2 $\frac{47}{32}$	$\frac{17}{64}$	1 $\frac{1}{2}$	2 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{9}{32}$	$\frac{1}{2}$		
	7.5	2 $\frac{21}{32}$	$\frac{3}{16}$	1 $\frac{1}{2}$	2 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{9}{32}$	$\frac{1}{2}$		
3	7.5	2 $\frac{23}{32}$	$\frac{23}{64}$	1 $\frac{7}{16}$	1 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	6	
	6.5	2 $\frac{27}{32}$	$\frac{17}{64}$	1 $\frac{7}{16}$	1 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{1}{4}$	$\frac{3}{8}$		
	5.5	2 $\frac{21}{32}$	$\frac{11}{64}$	1 $\frac{7}{16}$	1 $\frac{3}{4}$	$\frac{5}{8}$	$\frac{1}{4}$	$\frac{3}{8}$		

When beams frame opposite each other into another beam with web thickness less than $\frac{1}{4}$ in., or where beams of short span length are loaded to their full capacity, it may be necessary to use framing angles of greater strength than the standards.

TABLE FOR MINIMUM SPAN LENGTHS

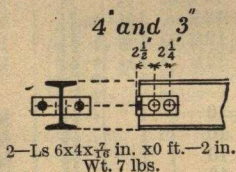
Depth of Beam	Weight	Span in Feet	Depth of Beam	Weight	Span in Feet	Depth of Beam	Weight	Span in Feet
24	80.0	22.0	.....	.....	.....	15	80.0	20.0
20	80.0	22.0	18	55.0	14.5	15	60.0	15.5
20	65.0	18.0	.....	.....	.....	15	42.0	11.0

STANDARDS.



$$C = \frac{1}{2} \text{ of Web} + \frac{1}{16} \text{ in.}$$

STANDARD FRAMING



Dist. B Inches	Dist. C Inches	Weight per Foot, Pounds	Depth of Beam Inches
5 $\frac{7}{16}$	$\frac{5}{16}$	10.5	4
5 $\frac{3}{8}$	$\frac{1}{4}$	9.5	
5 $\frac{1}{4}$	$\frac{3}{16}$	8.5	
5 $\frac{3}{16}$	$\frac{3}{16}$	7.5	
5 $\frac{3}{8}$	$\frac{1}{4}$	7.5	3
5 $\frac{1}{4}$	$\frac{3}{16}$	6.5	
5 $\frac{3}{16}$	$\frac{3}{16}$	5.5	

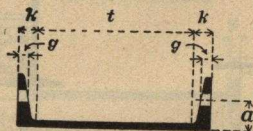
All rivets in standard framing angles are $\frac{3}{4}$ in. diameter.

Weights of standard framing angles include weight of shop and field rivets.

TABLE FOR MINIMUM SPAN LENGTHS

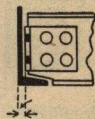
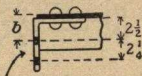
Depth of Beam	Weight	Span in Feet	Depth of Beam	Weight	Span in Feet	Depth of Beam	Weight	Span in Feet	Depth of Beam	Weight	Span in Feet
..	...	...	..	...	...	8	18.0	5.5	5	9.75	4.0
12	40.0	11.5	10	25.0	9.5	7	15.0	4.0	4	7.5	3.0
12	31.5	9.0	9	21.0	7.0	6	12.25	5.5	3	5.5	2.0

STANDARDS.



Depth of Chan. Inches	Weight per Foot, Pounds	Flange Inches	Web Inches	Gauge A Inches	Tangt. E Inches	Dist. k Inches	Grip G Inches	Max. Rivet or Bolt, Inches
15	55.00	3 1/8	1 1/8	2 1/4	12 1/4	1 3/8	5/8	3/4
	50.00	3 1/8	1 1/8	2 1/4	12 1/4	1 3/8	5/8	3/4
	45.00	3 1/8	1 1/8	2 1/4	12 1/4	1 3/8	5/8	3/4
	40.00	3 1/8	1 1/8	1 7/8	12 1/4	1 3/8	1 1/2	3/4
	35.00	3 1/8	1 1/8	1 7/8	12 1/4	1 3/8	1 1/2	3/4
	33.00	3 1/8	1 1/8	1 7/8	12 1/4	1 3/8	1 1/2	3/4
12	40.00	3 1/4	4/9	2	10	1	1 5/8	3/4
	35.00	3 1/4	4/9	2	10	1	1 5/8	3/4
	30.00	3 1/4	4/9	2	10	1	1 5/8	3/4
	25.00	3 1/4	4/9	1 3/4	10	1	1 5/8	3/4
	20.50	2 1/4	3/8	1 3/4	10	1	1 5/8	3/4
10	35.00	3 1/8	5/8	2	8 1/4	7/8	3/8	3/4
	30.00	3 1/8	5/8	2	8 1/4	7/8	3/8	3/4
	25.00	2 5/8	5/8	2	8 1/4	7/8	3/8	3/4
	20.00	2 4/7	3/8	1 1/2	8 1/4	7/8	7/16	3/4
	15.00	2 1/8	1 5/8	1 1/2	8 1/4	7/8	7/16	3/4
9	25.00	2 1/8	3/4	1 3/4	7 1/4	7/8	3/8	3/4
	20.00	2 1/8	3/4	1 3/4	7 1/4	7/8	3/8	3/4
	15.00	2 3/8	3/8	1 3/8	7 1/4	7/8	1 5/8	3/4
	13.25	2 1/8	1 5/8	1 3/8	7 1/4	7/8	1 5/8	3/4
8	21.25	2 5/8	3/4	1 1/2	6 1/4	7/8	3/8	3/4
	18.75	2 1/8	3/8	1 1/2	6 1/4	7/8	3/8	3/4
	16.25	2 7/8	3/8	1 1/2	6 1/4	7/8	3/8	3/4
	13.75	2 1/8	1 5/8	1 1/4	6 1/4	7/8	3/8	3/4
	11.25	2 1/4	3/8	1 1/4	6 1/4	7/8	3/8	3/4

STANDARDS.



This leg punched same as
6 in. leg of standards

$$C = \text{Web} + \frac{1}{16} \text{ in.}$$

STANDARD FRAMING

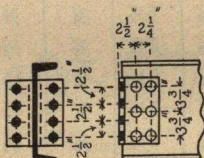
Dist. B
Inches

Dist. C
Inches

Weight
per foot
Pounds

Depth of
Chan.
Inches

15"



2—Ls 6x4x $\frac{7}{16}$ in. 0 ft.—10 in.
Wt. 31 lbs.

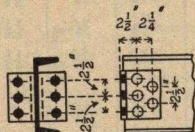
3 $\frac{5}{16}$
3 $\frac{1}{4}$
3 $\frac{1}{8}$
3
2 $\frac{15}{16}$
2 $\frac{7}{8}$

$\frac{7}{8}$
 $\frac{13}{16}$
 $\frac{11}{16}$
 $\frac{9}{16}$
 $\frac{1}{2}$
 $\frac{1}{2}$

55.00
50.00
45.00
40.00
35.00
33.00

15

12"



2—Ls 6x4x $\frac{7}{16}$ in. x0 ft.—7 $\frac{1}{2}$ in.
Wt. 23 lbs.

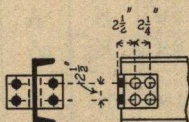
3 $\frac{1}{4}$
3 $\frac{1}{8}$
3
2 $\frac{7}{8}$
2 $\frac{13}{16}$

$\frac{13}{16}$
 $\frac{11}{16}$
 $\frac{9}{16}$
 $\frac{7}{16}$
 $\frac{3}{8}$

40.00
35.00
30.00
25.00
20.50

12

8, 9 and 10"



2—Ls 6x4x $\frac{7}{16}$ in. x0 ft.—5 in.
Wt. 16 lbs.

3 $\frac{1}{8}$
3
2 $\frac{13}{16}$
2 $\frac{3}{4}$

$\frac{11}{16}$
 $\frac{1}{2}$
 $\frac{3}{8}$
 $\frac{5}{16}$

25.00
20.00
15.00
13.25

9

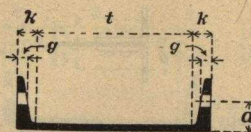
3 $\frac{1}{16}$
3
2 $\frac{7}{8}$
2 $\frac{13}{16}$
2 $\frac{3}{4}$

$\frac{5}{8}$
 $\frac{9}{16}$
 $\frac{7}{16}$
 $\frac{3}{8}$
 $\frac{5}{16}$

21.25
18.75
16.25
13.75
11.25

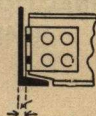
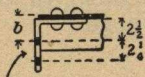
8

STANDARDS.



Depth of Chan. Inches	Weight per Foot, Pounds	Flange Inches	Web Inches	Gauge A Inches	Tangl. t Inches	Dist. k Inches	Grip G Inches	Max. Rivet or Bolt, Inches
7	19.75	$2\frac{3}{8}$	$\frac{5}{8}$	$1\frac{1}{2}$	$5\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{5}{8}$
	17.25	$2\frac{1}{8}$	$\frac{3}{4}$	$1\frac{1}{2}$	$5\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{5}{8}$
	14.75	$2\frac{1}{4}$	$\frac{1}{2}$	$1\frac{1}{4}$	$5\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{5}{8}$
	12.25	$2\frac{1}{4}$	$\frac{5}{16}$	$1\frac{1}{4}$	$5\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{5}{8}$
	9.75	$2\frac{3}{8}$	$\frac{1}{4}$	$1\frac{1}{4}$	$5\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{5}{8}$
6	15.50	$2\frac{3}{8}$	$\frac{9}{16}$	$1\frac{3}{8}$	$4\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{5}{8}$
	13.00	$2\frac{5}{8}$	$\frac{7}{16}$	$1\frac{3}{8}$	$4\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{5}{8}$
	10.50	$2\frac{1}{8}$	$\frac{5}{16}$	$1\frac{1}{8}$	$4\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{8}$
	8.00	$1\frac{5}{8}$	$\frac{1}{4}$	$1\frac{1}{8}$	$4\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{5}{8}$
5	11.50	$2\frac{1}{8}$	$\frac{15}{32}$	$1\frac{1}{4}$	$3\frac{3}{4}$	$\frac{5}{8}$	$\frac{5}{16}$	$\frac{1}{2}$
	9.00	$1\frac{5}{4}$	$\frac{21}{64}$	$1\frac{1}{4}$	$3\frac{3}{4}$	$\frac{5}{8}$	$\frac{5}{16}$	$\frac{1}{2}$
	6.50	$1\frac{3}{4}$	$\frac{3}{16}$	1	$3\frac{3}{4}$	$\frac{5}{8}$	$\frac{5}{16}$	$\frac{1}{2}$
4	7.25	$1\frac{3}{8}$	$\frac{21}{64}$	1	$2\frac{3}{4}$	$\frac{5}{8}$	$\frac{9}{32}$	$\frac{1}{2}$
	6.25	$1\frac{21}{32}$	$\frac{17}{64}$	1	$2\frac{3}{4}$	$\frac{5}{8}$	$\frac{9}{32}$	$\frac{1}{2}$
	5.25	$1\frac{17}{64}$	$\frac{3}{16}$	1	$2\frac{3}{4}$	$\frac{5}{8}$	$\frac{9}{32}$	$\frac{1}{2}$
3	6.00	$1\frac{9}{4}$	$\frac{3}{8}$	$\frac{15}{16}$	$1\frac{3}{4}$	$\frac{5}{8}$	$\frac{1}{4}$	$\frac{3}{8}$
	5.00	$1\frac{1}{2}$	$\frac{17}{64}$	$\frac{15}{16}$	$1\frac{3}{4}$	$\frac{5}{8}$	$\frac{1}{4}$	$\frac{3}{8}$
	4.00	$1\frac{1}{32}$	$\frac{11}{64}$	$\frac{15}{16}$	$1\frac{3}{4}$	$\frac{5}{8}$	$\frac{1}{4}$	$\frac{3}{8}$

STANDARDS.

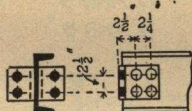


This leg punched same as
6 in. leg of standards

C=Web + $\frac{1}{16}$ in.

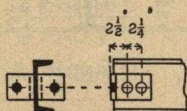
STANDARD FRAMING

7



2—Ls 6x4x $\frac{7}{16}$ in. x0 ft.—5 in.
Wt. 16 lbs.

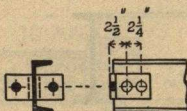
5' and
6'



2—Ls 6x4x $\frac{7}{16}$ in. x0 ft.—3 in. for 6 in.
Wt. 9 lbs.

2—Ls 6x4x $\frac{7}{16}$ in. x0 ft.—2 1/2 in. for
5 in. Wt. 8 lbs.

4' and
3'



2—Ls 6x4x $\frac{7}{16}$ in. x 0 ft.—2 in.
Wt. 7 lbs.

Dist. B
Inches

Dist. C
Inches

Weight
per Foot
Pounds

Depth of
Chan.
Inches

3 1/8

1 1/8

19.75

3

1 1/8

17.25

2 15/16

1/2

14.75

2 13/16

3/8

12.25

2 11/16

1/4

9.75

3 1/8

3/8

15.50

2 15/16

1/2

13.00

2 13/16

3/8

10.50

2 11/16

1/4

8.00

3

1/8

11.50

2 13/16

3/8

9.00

2 11/16

1/4

6.50

2 13/16

3/8

7.25

2 3/4

5/16

6.25

2 11/16

1/4

5.25

2 3/8

7/16

6.00

2 3/4

5/16

5.00

2 11/16

1/4

4.00

7

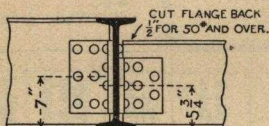
6

5

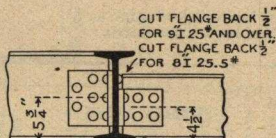
4

3

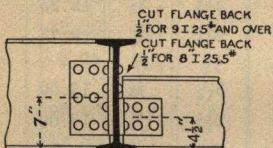
CONNECTIONS FOR DIFFERENT DEPTHS OF BEAMS. FRAMING OPPOSITE.



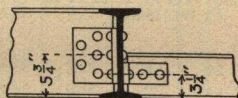
15" AND 12"



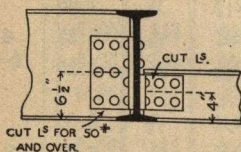
12" AND 10"
12" AND 9"
12" AND 8"



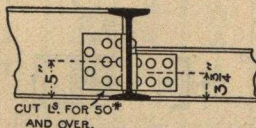
15" AND 10"
15" AND 9"
15" AND 8"



12" AND 6"

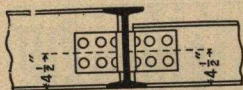


15" AND 7"

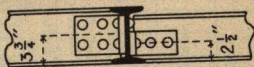


12" AND 7"

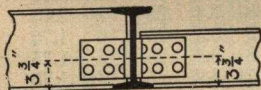
CONNECTIONS FOR DIFFERENT DEPTHS OF
BEAMS. FRAMING OPPOSITE.



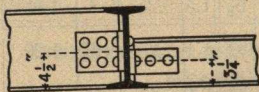
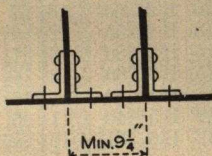
10" AND 9"
10" AND 8"
9" AND 8"



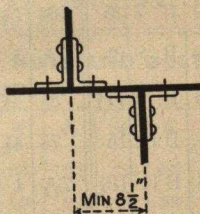
7" AND 6"



10" AND 7"
9" AND 7"
8" AND 7"



10" AND 6"
9" AND 6"
8" AND 6"



Use standard gauge ($2\frac{1}{2}$ in.) in connection Ls on beam with lightest web. The first hole in connection Ls is $3\frac{1}{4}$ in. from bottom of beam in all cases, except when a 7 in. beam frames opposite, in which case the connection is special.

DEARBORN FOUNDRY COMPANY.

CAST SEPARATORS FOR BEAMS.

Separators for 18 and 20" beams are made of $\frac{5}{8}$ " metal.

Separators for 6" to 15" beams are made of $\frac{1}{2}$ " metal.

Separators for 5" beams and under are made of $\frac{3}{8}$ " metal.

DESIGNATION OF BEAM.			DISTANCES.		BOLTS.			WEIGHTS.		
Depth.	No. of Shape.	Weight.	Out to out of flanges of beams.	Center to center of beams.	Size.	Distance, center to center.	Length.	Bolts and nuts.	Increase in weight of separator bolts for 1 inch additional spread of beams.	Separator.
in.		lbs.	in.	in.	in.	in.	in.	lbs.	lbs.	lbs.

SEPARATORS WITH TWO BOLTS.

20	B 1	80	14 $\frac{3}{4}$	7 $\frac{3}{4}$	$\frac{7}{8}$	10	9 $\frac{1}{2}$	5.3	.34	30	3.10
20	B 2	65	13 $\frac{1}{4}$	7	$\frac{7}{8}$	10	8 $\frac{3}{4}$	5.0	.34	24	3.10
18	B 2 $\frac{1}{2}$	55	12 $\frac{3}{4}$	6 $\frac{3}{4}$	$\frac{3}{4}$	9	8 $\frac{1}{2}$	3.4	.25	19	2.75
15	B 3	80	13 $\frac{3}{8}$	7 $\frac{1}{4}$	$\frac{3}{4}$	7	9	3.5	.25	16	1.75
15	B 3	60	12 $\frac{3}{4}$	6 $\frac{3}{4}$	$\frac{3}{4}$	7	8 $\frac{1}{2}$	3.4	.25	15	1.75
15	B 4	42	11 $\frac{3}{4}$	6 $\frac{1}{4}$	$\frac{3}{4}$	7	7 $\frac{3}{8}$	3.2	.25	13 $\frac{1}{2}$	1.75
12	B 5	40	11 $\frac{1}{4}$	6	$\frac{3}{4}$	6 $\frac{1}{2}$	7 $\frac{1}{2}$	3.2	.25	12	1.50
12	B 6	31 $\frac{1}{2}$	10 $\frac{3}{4}$	5 $\frac{3}{4}$	$\frac{3}{4}$	6 $\frac{1}{2}$	7 $\frac{1}{4}$	3.1	.25	12	1.50

SEPARATORS WITH ONE BOLT.

12	B 5	40	11 $\frac{1}{4}$	6	$\frac{3}{4}$	..	7 $\frac{1}{2}$	1.6	.25	10	1.50
12	B 6	31 $\frac{1}{2}$	10 $\frac{3}{4}$	5 $\frac{3}{4}$	$\frac{3}{4}$	..	7 $\frac{1}{4}$	1.6	.25	10	1.50
10	B 7	25	10 $\frac{1}{8}$	5 $\frac{1}{2}$	$\frac{3}{4}$	..	6 $\frac{7}{8}$	1.5	.25	8	1.25
9	B 8	21	9 $\frac{5}{8}$	5	$\frac{3}{4}$	..	6 $\frac{3}{8}$	1.4	.25	6 $\frac{3}{4}$	1.20
8	B 9	17 $\frac{3}{4}$	8 $\frac{1}{2}$	4 $\frac{1}{2}$	$\frac{3}{4}$	..	5 $\frac{3}{4}$	1.4	.25	5 $\frac{1}{2}$	1.00
7	B 10	15	7 $\frac{7}{8}$	4 $\frac{1}{4}$	$\frac{3}{4}$	..	5 $\frac{1}{2}$	1.3	.25	4 $\frac{1}{2}$	.75
6	B 11	12 $\frac{1}{4}$	7 $\frac{5}{8}$	4	$\frac{3}{4}$	..	5 $\frac{1}{4}$	1.3	.25	4	.60
5	B 12	9 $\frac{3}{4}$	6 $\frac{1}{2}$	3 $\frac{1}{2}$	$\frac{3}{4}$	..	4 $\frac{3}{4}$	1.2	.25	3	.50
4	B 13	7 $\frac{1}{2}$	5 $\frac{7}{8}$	3 $\frac{1}{4}$	$\frac{3}{4}$	..	4 $\frac{1}{2}$	1.2	.25	2 $\frac{1}{2}$	.40
3	B 14	5 $\frac{1}{2}$	5 $\frac{9}{16}$	3	$\frac{5}{8}$	..	4 $\frac{1}{4}$	0.7	.09	1 $\frac{1}{2}$	.25

**AVERAGE WEIGHT OF SQUARE HEAD
MACHINE BOLTS PER 100.**

Length.	DIAMETER.								
	¼	⅝	¾	⅞	½	⅝	¾	⅞	1
1½	4.0	6.8	10.6	15.0	23.9	40.5	70.0	.....	.....
1¾	4.4	7.3	11.3	16.1	25.1	42.7	73.1	.....	.....
2	4.7	7.8	12.0	17.2	26.3	44.8	76.2	.....	.....
2¼	5.1	8.4	12.6	18.2	27.7	47.0	79.3	.....	.....
2½	5.4	8.9	13.3	19.2	29.0	49.2	82.4	120.5	.....
2¾	5.8	9.5	14.0	20.2	30.4	51.4	85.5	124.7	.....
3	6.1	10.0	14.7	21.2	31.8	53.5	88.7	128.9	185.0
3½	6.8	11.1	16.0	23.2	34.7	57.9	95.0	137.4	196.0
4	7.5	12.2	17.4	25.2	37.5	62.3	101.2	145.8	207.0
4½	8.2	13.2	18.7	27.2	40.2	66.7	107.5	159.2	218.0
5	8.9	14.3	20.0	29.1	43.0	71.0	113.7	167.7	229.0
5½	9.6	15.4	21.4	31.2	45.7	75.4	120.0	176.1	240.0
6	10.3	16.5	22.8	33.1	48.4	79.8	126.2	184.6	251.0
6½	11.0	17.6	24.1	35.1	51.2	84.1	132.5	193.0	262.0
7	11.7	18.6	25.9	37.1	54.0	88.5	138.7	201.4	273.0
7½	12.4	19.7	27.7	39.1	56.7	92.9	145.0	209.9	284.0
8	13.1	20.8	29.5	41.0	59.4	97.2	151.2	218.3	295.0
9	.....	.....	33.1	45.0	64.8	106.0	163.7	240.2	317.0
10	.....	.....	36.7	49.0	70.3	114.7	176.2	257.1	339.0
11	.....	.....	40.4	53.0	75.8	123.5	188.7	273.9	360.0
12	.....	.....	44.0	57.0	81.3	132.2	201.0	290.0	382.0
13	.....	.....	.....	.....	86.7	140.7	213.4	307.7	404.0
14	.....	.....	.....	.....	92.2	149.2	225.9	324.5	426.0
15	.....	.....	.....	.....	97.7	157.6	238.3	341.4	448.0
16	.....	.....	.....	.....	103.1	166.1	250.8	358.3	470.0
17	.....	.....	.....	.....	108.6	174.6	263.2	375.2	492.0
18	.....	.....	.....	.....	114.1	183.1	275.6	392.0	514.0
19	.....	.....	.....	.....	119.5	191.5	288.1	408.9	536.0
20	.....	.....	.....	.....	125.0	200.0	300.5	425.8	558.0
Per inch ad- ditional.	1.4	2.2	3.6	4.0	5.5	8.5	12.4	16.9	22.0

**APPROXIMATE WEIGHT OF NUTS AND BOLT
HEADS, IN POUNDS.**

Diam. of Bolt in inches.	¼	⅝	¾	⅞	½	⅝	¾
Weight of Hexagon Nut and Head	.017	.042	.057	.109	.128	.267	.43
Weight of Square Nut and Head	.021	.049	.069	.120	.164	.320	.55
Diam. of Bolt in inches.	¾	1	1¼	1½	1¾	2	2½
Weight of Hexagon Nut and Head	.73	1.10	2.14	3.78	5.6	8.75	17.0
Weight of Square Nut and Head	.88	1.31	2.56	4.42	7.0	10.5	21.0

BEARING PLATES FOR BEAMS AND CHANNELS ON BRICK OR MASONRY.

Size of Beams or Channels	Bearing on Wall.	Size of Cast Iron Bearing Plates	Weight Lbs.	Safe Bearing Values in Tons for Plates Resting on		
				Common Brick	1st Cl. Brick	Ord. Masonry
3" 4" 5" and 6"	6"	6"x6"x $\frac{1}{2}$ "	4 $\frac{1}{2}$	1.8	2.7	4.5
	6"	6"x6"x $\frac{5}{8}$ "	6			
7" and 8"	8"	8"x8"x $\frac{3}{4}$ "	12	3.2	4.8	8.0
	8"	8"x8"x 1"	17			
9" and 10"	8"	8"x12"x $\frac{3}{4}$ "	19	4.8	7.2	12.0
	8"	8"x12"x 1"	25			
12" 31.5 lbs.	12"	12"x12"x $\frac{3}{4}$ "	28	7.2	10.8	18.0
	12"	12"x12"x 1"	38			
12" 40 lbs. and up, and 15" 42 lbs.	12"	12"x16"x1"	50	9.6	14.4	24.0
	12"	12"x16"x1 $\frac{1}{4}$ "	62			
15" 60 and 80 lbs.	12"	12"x18"x1"	56	10.8	16.2	27.0
	12"	12"x18"x1 $\frac{1}{4}$ "	70			
18" 20" 24"	16"	16"x16"x1 $\frac{1}{4}$ "	83	12.8	19.2	32.0

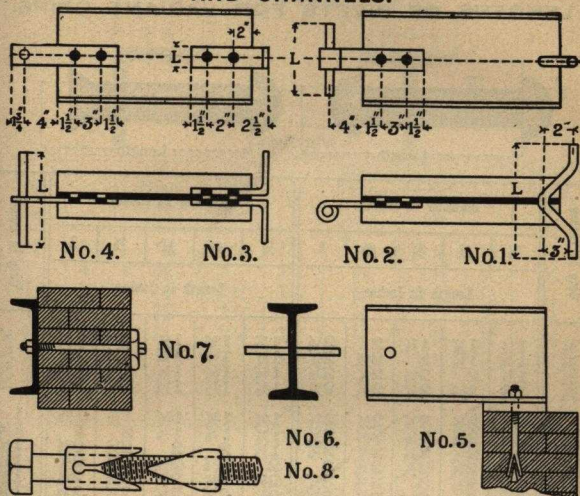
Above bearing values are based on the following table:

Allowable load on brick work, ordinary,	100 lbs. per square inch.
" " " 1st class work,	150 " " " "
" " " stone masonry,	250 " " " "

Use the thicker plate for bearing values exceeding those given under common brick work.

When end reaction exceeds the above safe bearing values, special plates will be provided. 20" and 24" beams will usually require special calculations.

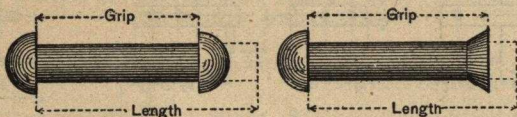
STANDARD WALL ANCHORS FOR BEAMS
AND CHANNELS.



No. of anchor.	Depth of beam or channel in inches.	Size of bar or L's in inches.	Length L in inches.	Weight in pounds.	No. of anchor.	Depth of beam or channel in inches.	Size of bar or L's in inches.	Length L in inches.	Weight in pounds.
1	3 to 9 10 to 24	$\frac{3}{4}$	15 18	$2\frac{1}{4}$ $2\frac{3}{4}$	4	3 to 5 6 to 10 10 to 24	$2\frac{1}{4} \times \frac{5}{8}$ $3 \times \frac{3}{8}$ $3 \times \frac{3}{8}$	12 12 15	$6\frac{1}{2}$ $7\frac{1}{2}$ 8
2	3 to 5 6 to 10 12 to 24	$2\frac{1}{4} \times \frac{5}{8}$ $\times \frac{3}{8}$ $\times \frac{3}{8}$	6 6 12	5 6 7	6	3 to 9 10 to 24	$\frac{3}{4}$	15 18	2 $2\frac{1}{4}$
3	3 to 5 6 to 10 12 to 24	$6 \times 4 \times \frac{3}{8}$ $6 \times 6 \times \frac{3}{8}$ $6 \times 6 \times \frac{1}{2}$	$2\frac{1}{4}$ 3 3	6 8 11	All dimensions are variable where not given.				

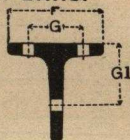
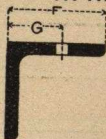
All anchors are shipped loose, and riveted or bolted to beams in the field, and in order to avoid two sizes of holes in the same piece, anchors should so be selected that holes for them and their connections may be $\frac{1}{8}$. The weights given above include the bolts or rivets for full connections. Anchors Nos. 1, 2, 3, 4 and 6 are most common in building construction.

LENGTHS OF RIVETS FOR VARIANT GRIPS.



Grip in Inches	Diameter in Inches					Diameter in Inches					Grip in Inches
	1/2	5/8	3/4	7/8	1	1/2	5/8	3/4	7/8	1	
	Length in Inches					Length in Inches					
1/2	1 1/2	1 3/4	1 7/8	2	2 1/8	1 1/8	1 1/4	1 1/2	1 3/8	1 3/8	1/2
3/8	1 5/8	1 7/8	2	2 1/8	2 1/4	1 1/4	1 3/8	1 1/2	1 5/8	1 5/8	3/8
3/4	1 3/4	2	2 1/8	2 1/4	2 3/8	1 3/8	1 1/2	1 5/8	1 3/4	1 3/4	3/4
7/8	1 7/8	2 1/8	2 1/4	2 3/8	2 1/2	1 1/2	1 5/8	1 3/4	1 3/4	1 3/4	7/8
1	2	2 1/4	2 3/8	2 1/2	2 5/8	1 5/8	1 3/4	1 3/4	1 7/8	1 7/8	1
1 1/8	2 1/8	2 3/8	2 1/2	2 5/8	2 3/4	1 3/4	1 7/8	1 7/8	2	2	1 1/8
1 1/4	2 1/4	2 5/8	2 3/4	2 5/8	2 7/8	1 7/8	2	2	2 1/8	2 1/8	1 1/4
1 1/2	2 3/8	2 5/8	2 3/4	2 7/8	3	2	2 1/8	2 1/8	2 1/4	2 1/4	1 1/2
1 3/8	2 3/8	2 7/8	3	3 1/8	3 1/4	2 1/8	2 1/4	2 3/8	2 3/8	2 3/8	1 3/8
1 5/8	2 3/4	3	3 1/8	3 1/4	3 3/8	2 1/4	2 3/8	2 1/2	2 3/8	2 3/8	1 5/8
1 3/4	2 3/4	3 1/8	3 1/4	3 3/8	3 1/2	2 3/8	2 1/2	2 3/8	2 3/4	2 3/4	1 3/4
1 7/8	3	3 1/4	3 3/8	3 1/2	3 5/8	2 1/2	2 5/8	2 3/4	2 3/4	2 3/4	1 7/8
2	3 1/8	3 3/8	3 1/2	3 5/8	3 3/4	2 5/8	2 3/4	2 7/8	2 7/8	3	2
2 1/8	3 3/4	3 3/8	3 5/8	3 3/4	3 7/8	2 3/4	2 7/8	3	3	3 1/8	2 1/8
2 1/4	3 3/8	3 3/8	3 3/4	3 7/8	4	2 7/8	3	3 1/8	3 1/8	3 3/4	2 1/4
2 3/8	3 3/2	3 3/4	3 7/8	4	4 1/8	3	3 1/8	3 3/4	3 3/4	3 3/8	2 3/8
2 1/2	3 5/8	3 7/8	4	4 1/8	4 1/4	3 1/8	3 3/4	3 3/8	3 3/8	3 3/8	2 1/2
2 3/8	3 3/4	4	4 1/8	4 1/4	4 5/8	3 3/4	3 3/8	3 1/2	3 1/2	3 3/8	2 3/8
2 1/2	3 7/8	4 1/8	4 1/4	4 3/8	4 1/2	3 3/8	3 1/2	3 5/8	3 5/8	3 3/4	2 1/2
2 3/4	4	4 1/4	4 3/8	4 1/2	4 5/8	3 1/2	3 5/8	3 3/4	3 3/4	3 3/8	2 3/4
2 7/8	4	4 1/4	4 3/8	4 1/2	4 5/8	3 1/2	3 5/8	3 3/4	3 3/4	3 3/8	2 7/8
3	4 1/4	4 1/2	4 5/8	4 3/4	4 7/8	3 3/4	3 7/8	3 7/8	4	4 1/8	3
3 1/8	4 3/8	4 5/8	4 3/4	4 7/8	5	3 7/8	4	4	4 1/8	4 1/4	3 1/8
3 1/4	4 1/2	4 3/4	4 7/8	5	5 1/8	4	4 1/8	4 1/8	4 1/4	4 3/8	3 1/4
3 3/8	4 3/8	4 7/8	5	5 1/8	5 1/4	4 1/8	4 3/8	4 3/8	4 1/2	4 3/8	3 3/8
3 1/2	4 3/4	5	5 1/8	5 1/4	5 3/8	4 1/4	4 3/8	4 3/8	4 1/2	4 3/4	3 1/2
3 3/4	4 7/8	5 1/8	5 1/4	5 3/8	5 1/2	4 3/8	4 1/2	4 1/2	4 3/8	4 3/4	3 3/4
3 5/8	5	5 1/4	5 3/8	5 1/2	5 5/8	4 1/2	4 3/8	4 5/8	4 3/4	4 7/8	3 5/8
3 3/4	5	5 1/8	5 3/8	5 1/2	5 3/4	4 3/8	4 3/4	4 3/4	4 7/8	5	3 3/4
3 7/8	5 1/8	5 3/8	5 1/2	5 3/8	5 3/4	4 3/8	4 3/4	4 3/4	4 7/8	5	3 7/8
4	5 1/4	5 1/2	5 5/8	5 3/4	5 7/8	4 3/4	4 7/8	4 7/8	5	5 1/8	4
4 1/8	5 3/8	5 5/8	5 3/4	5 7/8	6	4 7/8	5	5	5 1/8	5 1/4	4 1/8
4 1/4	5 1/2	5 3/4	5 7/8	6	6 1/8	5	5 1/8	5 1/4	5 1/4	5 3/8	4 1/4
4 3/8	5 3/8	5 7/8	6	6 1/8	6 1/4	5 1/8	5 1/4	5 3/8	5 3/8	5 1/2	4 3/8
4 1/2	5 3/4	6	6 1/4	6 3/8	6 1/2	5 1/4	5 3/8	5 1/2	5 1/2	5 5/8	4 1/2
4 5/8	6	6 1/4	6 3/8	6 1/2	6 3/8	5 1/2	5 3/8	5 3/8	5 3/8	5 3/4	4 5/8
4 3/4	6 1/8	6 3/8	6 1/2	6 3/8	6 3/4	5 3/8	5 3/4	5 3/4	5 3/4	5 7/8	4 3/4
4 7/8	6 1/4	6 3/8	6 3/8	6 3/4	6 7/8	5 3/4	5 3/4	5 3/4	5 3/4	6	4 7/8
5	6 3/8	6 3/8	6 3/4	6 7/8	7	5 3/4	5 3/4	5 3/4	5 3/4	6 1/8	5

STANDARD SPACING OF RIVET AND BOLT HOLES
IN ANGLES AND T BARS.



ANGLES.

Lgth of leg.	G	Max. Diam. of rivet.	Lgth of leg.	G	Max. Diam. of rivet.	Lgth of leg.	G	Max. Diam. of rivet.
8	4½	¾	3¼	1¾	¾	1½	1⅜	½
7	4	¾	3	1¾	¾	1⅜	¾	½
6	3½	¾	2¾	1½	¾	1¼	1⅞	½
5	3	¾	2½	1⅜	¾	1	1⅞	¾
4½	2½	¾	2¼	1¼	¾	¾	½	¾
4	2¼	¾	2	1⅞	¾	¾	1⅞	¼
3½	2	¾	1¾	1⅞	¾			

T BARS.

Size.	Weight per ft.	Area.	Flange G.		Stem G1.		Maximum rivet G.	Maximum rivet G1.
			Thick- ness.	Gauge.	Thick- ness.	Gauge.		
4 × 4	13.7	4.02	½	2½	½	2½	⅝	⅞
3½ × 3½	11.7	3.45	½	2¼	½	2⅞	½	⅞
3 × 3	10.0	2.94	½	1⅞	½	1⅞	½	⅞
3 × 3	6.6	1.95	1⅞	1⅞	1⅞	1⅞	½	⅞
2½ × 2½	6.4	1.89	⅜	1⅞	⅜	1¾	⅜	⅝
2¼ × 2¼	4.9	1.44	1⅞	1⅞	1⅞	1½	⅜	⅝
2 × 2	4.3	1.26	1⅞	1¼	1⅞	1⅜	⅜	½
1¾ × 1¾	3.1	0.90	¼	1⅞	¼	1¼	¼	½
1½ × 1½	2.4	0.75	¼	1	¼	1	¼	⅜
1¼ × 1¼	2.04	0.60	¼	1⅞	¼	¾	¼	¼
1 × 1	1.23	0.36	1⅞		1⅞			
4 × 5	15.6	4.56	½	2½	½	3¼	¾	⅞
4 × 4½	14.6	4.29	½	2½	½	2¾	¾	⅞
4 × 3	9.3	2.73	⅜	2½	⅜	1⅞	¾	⅞
4 × 2½	8.6	2.52	⅜	2½	⅜	1⅞	¾	¾
4 × 2	7.9	2.31	⅜	2½	⅜	1¼	¾	½
3½ × 4	12.8	3.75	½	2¼	½	2½	⅝	⅞
3½ × 3	10.9	3.21	½	2¼	½	1⅞	⅝	⅞
3 × 4	11.8	3.48	½	1⅞	½	2½	⅝	⅞
3 × 3½	10.9	3.21	½	1⅞	½	2¼	¾	⅞
3 × 2½	7.2	2.10	⅜	1⅞	⅜	1⅞	¾	¾
2½ × 3	7.2	2.10	⅜	1⅞	⅜	2	⅜	⅞

WEIGHTS AND DIMENSIONS OF ANGLES—EQUAL LEGS.

Size in Inches	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1	1 1/16	1 1/8
8 x 8	....	....	....	....	....	....	26.4	29.6	32.7	35.8	38.9	42.0	45.0	48.1	51.0	54.0	56.9
6 x 6	....	....	....	....	14.9	17.2	19.6	21.9	24.2	26.5	28.7	31.0	33.1				
5 x 5	....	....	....	....	12.3	14.3	16.2	18.1	20.0	21.8	23.6	25.4	27.2				
4 x 4	....	....	6.6	8.2	9.8	11.3	12.8	14.3	15.7	17.1	18.5						
3 1/2 x 3 1/2	3.7	3.7	5.8	7.2	8.5	9.8	11.1	12.4	13.6								
3 1/4 x 3 1/4	3.4	3.4	....	....	7.9	9.1	10.2	11.4	12.5	13.6	14.7						
3 x 3	2.6	....	4.9	6.1	7.2	8.3	9.4	10.4	11.5								
2 3/4 x 2 3/4	2.4	....	4.5	5.6	6.6	7.6	8.5										
2 1/2 x 2 1/2	2.1	3.1	4.1	5.0	5.9	6.8	7.7										
2 1/4 x 2 1/4	1.9	....	3.7	4.5	5.3	6.1	6.8										
2 x 2	1.7	2.5	3.2	4.0	4.7	5.3											
1 3/4 x 1 3/4	1.5	2.2	2.8	3.4	4.0	4.6											
1 1/2 x 1 1/2	1.3	1.8	2.4	2.9	3.4												
1 1/4 x 1 1/4	1.1	1.5	2.0														
1 x 1	0.8	1.2															
3/4 x 3/4	0.6	0.9															

The above table gives weights per foot corresponding to thickness, varying by 1/16 inch.

WEIGHTS AND DIMENSIONS OF ANGLES—UNEQUAL LEGS.

Size in In.	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{1}{2}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{13}{16}$	$\frac{7}{8}$	$\frac{15}{16}$	1	$1\frac{1}{16}$	$1\frac{1}{8}$
7 x $3\frac{1}{2}$						15.0	17.0	19.1	21.0	23.0	24.9	26.8	28.7	30.5	32.3	....	....
6 x $4\frac{1}{2}$					12.3	14.3	16.2	18.1	20.0	21.8	23.6	25.4	27.2	....	....	....	....
6 x $3\frac{1}{2}$					11.7	13.5	15.3	17.1	18.9	20.6	22.4	24.0	25.7	....	....	....	....
5 x 4					11.0	12.8	14.5	16.2	17.8	19.5	21.1	22.7	24.2	....	....	....	....
5 x $3\frac{1}{2}$				8.7	10.4	12.0	13.6	15.2	16.8	18.3	19.8	....	....	....	....	....	....
5 x 3				8.2	9.8	11.3	12.8	14.3	15.7	17.1	18.5	....	....	....	....	....	....
$4\frac{1}{2}$ x 3				7.7	9.1	10.6	11.9	13.3	14.7	16.0	17.3	18.5	....	....	....	....	....
4 x $3\frac{1}{2}$					9.1	10.6	11.9	13.3	14.7	16.0	17.3	18.5	....	....	....	....	....
4 x 3				7.2	8.5	9.8	11.1	12.4	13.6	14.8	16.0	....	....	....	....	....	....
$3\frac{1}{2}$ x 3			5.3	6.6	7.9	9.1	10.2	11.4	12.5	....	....	....	....	....	....	....	....
$3\frac{1}{2}$ x $2\frac{1}{2}$			4.9	6.1	7.2	8.3	9.4	10.4	....	....	....	....	....	....	....	....	....
$3\frac{1}{4}$ x 2			4.3	5.3	6.3	7.2	8.1	....	....	....	....	....	....	....	....	....	....
$3\frac{1}{4}$ x $1\frac{1}{2}$		3.0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
3 x $2\frac{1}{2}$			4.5	5.6	6.6	7.6	8.5	....	....	....	....	....	....	....	....	....	....
3 x 2		3.1	4.1	5.0	5.9	6.8	7.7	....	....	....	....	....	....	....	....	....	....
$2\frac{1}{2}$ x 2		2.8	3.7	4.5	5.3	6.1	6.8	....	....	....	....	....	....	....	....	....	....
$2\frac{1}{2}$ x $1\frac{3}{4}$		2.6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
$2\frac{1}{2}$ x $1\frac{1}{2}$		2.5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
2 x $1\frac{1}{2}$		2.2	2.8	3.4	4.0	....	....	....	....	....	....	....	....	....	....	....	....
2 x $1\frac{1}{8}$		2.1	2.7	3.3	3.9	....	....	....	....	....	....	....	....	....	....	....	....
$1\frac{3}{4}$ x $1\frac{1}{2}$			2.6	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1 x $1\frac{1}{16}$		1.0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Above table gives weights per foot corresponding to thickness, varying by $\frac{1}{16}$ inch.

SAFE LOADS FOR EQUAL LEG ANGLE STRUTS.

IN TONS OF 2,000 LBS.

Assumed Strain per square inch=12,500 lbs. Reduced by
Gordon's Formulæ.

Size of Angles in inches.	LENGTH IN FEET.									
	6	8	10	12	14	16	18	20	22	24
$6 \times 6 \times \frac{7}{16}$	55.12	51.36	47.22	42.99	38.62	34.88	31.13	28.23	25.22	22.70
$6 \times 6 \times \frac{7}{8}$	28.95	27.17	25.18	23.10	21.06	19.10	17.29	15.62	14.12	12.78
$4 \times 4 \times \frac{3}{4}$	27.34	23.58	20.04	17.02	14.43	12.34	10.48	9.02	7.81	5.44
$4 \times 4 \times \frac{3}{8}$	14.80	13.06	11.34	9.65	8.40	7.18	6.20	5.38	4.69	4.11
$3\frac{1}{2} \times 3\frac{1}{2} \times \frac{5}{8}$	18.38	15.27	12.56	10.36	8.57	7.11	5.97	5.00	4.34	3.70
$3\frac{1}{2} \times 3\frac{1}{2} \times \frac{3}{8}$	12.15	10.38	8.74	7.33	6.19	5.21	4.43	3.79	3.27	2.85
$3 \times 3 \times \frac{5}{8}$	14.4	11.6	9.26	7.88	5.99	4.92	4.09	3.44	2.69	2.51
$3 \times 3 \times \frac{3}{4}$	6.54	5.44	4.36	3.55	2.90	2.40	2.00	1.70	1.45	1.25
$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{2}$	8.65	6.64	5.15	4.02	3.19	2.58	2.02	1.76		
$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$	4.77	3.73	2.43	2.31	1.85	1.51	1.25	0.96	0.88	
$2 \times 2 \times \frac{7}{16}$	4.88	3.53	2.59	1.95	1.57	1.21				
$2 \times 2 \times \frac{1}{8}$	1.75	1.33	1.01	0.77	0.62	0.49	0.40			
$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{7}{16}$	3.38	2.32	1.65	1.28	0.94					
$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{1}{8}$	1.31	0.95	0.70	0.53	0.41					
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{8}$	2.17	1.64	1.01	0.74						
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$	0.93	0.64	0.46	0.34						
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{4}$	1.00	0.64	0.44	0.32						
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{8}$	0.57	0.36	0.20	0.17						
$1 \times 1 \times \frac{3}{16}$	0.43	0.26	0.18							
$1 \times 1 \times \frac{1}{8}$	0.33	0.20								

STEEL ANGLES.

SAFE LOADS, IN TONS OF 2,000 LBS., UNIFORMLY
DISTRIBUTED, FOR ANGLES, WITH
EQUAL LEGS.

Size of Angle.	DISTANCE BETWEEN SUPPORTS IN FEET.									
	1	2	3	4	5	6	7	8	9	10
6 × 6 × $\frac{7}{8}$	16.28	8.14	5.43	4.07	3.26	2.72	2.33	2.04	1.81	1.63
6 × 6 × $\frac{5}{8}$	30.56	15.28	10.19	7.64	6.11	5.09	4.37	3.82	3.40	3.06
5 × 6 × $\frac{1}{2}$	8.88	4.44	2.96	2.22	1.78	1.48	1.27	1.11	0.99	0.89
5 × 5 × $\frac{3}{4}$	18.08	9.04	6.03	4.52	3.62	3.01	2.58	2.26	2.01	1.81
4 × 4 × $\frac{5}{8}$	6.08	3.04	2.03	1.52	1.22	1.01	0.87	0.76	0.68	0.61
4 × 4 × $\frac{3}{4}$	11.24	5.62	3.75	2.81	2.25	1.87	1.61	1.41	1.25	1.12
$3\frac{1}{2} \times 3\frac{1}{2} \times \frac{3}{8}$	4.60	2.30	1.53	1.15	0.92	0.77	0.66	0.58	0.51	0.46
$3\frac{1}{2} \times 3\frac{1}{2} \times \frac{1}{2}$	8.12	4.06	2.71	2.03	1.62	1.35	1.16	1.02	0.90	0.81
$3\frac{1}{4} \times 3\frac{1}{4} \times \frac{3}{8}$	3.96	1.98	1.32	0.99	0.79	0.66	0.57	0.50	0.44	0.40
$3\frac{1}{4} \times 3\frac{1}{4} \times \frac{1}{2}$	5.44	2.72	1.81	1.36	1.09	0.91	0.78	0.68	0.60	0.54
3 × 3 × $\frac{1}{4}$	2.32	1.16	0.77	0.58	0.46	0.39	0.33	0.29	0.26	0.23
3 × 3 × $\frac{5}{8}$	5.20	2.60	1.73	1.30	1.04	0.87	0.74	0.65	0.58	0.52
$2\frac{3}{4} \times 2\frac{3}{4} \times \frac{1}{4}$	1.92	0.96	0.64	0.48	0.38	0.32	0.28	0.24	0.21	0.19
$2\frac{3}{4} \times 2\frac{3}{4} \times \frac{1}{2}$	3.56	1.78	1.18	0.89	0.71	0.58	0.51	0.45	0.40	0.36
$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$	1.60	0.80	0.53	0.40	0.32	0.27	0.23	0.20	0.18	0.16
$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{2}$	2.92	1.46	0.97	0.73	0.58	0.49	0.42	0.37	0.32	0.29
$2\frac{1}{4} \times 2\frac{1}{4} \times \frac{1}{4}$	1.28	0.64	0.43	0.32	0.26	0.21	0.18	0.16	0.14	0.13
$2\frac{1}{4} \times 2\frac{1}{4} \times \frac{1}{2}$	2.32	1.16	0.77	0.58	0.46	0.39	0.33	0.29	0.26	0.23
2 × 2 × $\frac{1}{8}$	0.60	0.30	0.20	0.15	0.12	0.10	0.09	0.08	0.07	0.06
2 × 2 × $\frac{7}{16}$	1.60	0.80	0.53	0.40	0.32	0.27	0.23	0.20	0.18	0.16
$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{1}{8}$	0.44	0.22	0.15	0.11	0.09	0.07	0.06	0.06	0.05	0.04
$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{7}{16}$	1.20	0.60	0.40	0.30	0.24	0.20	0.17	0.15	0.13	0.12
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{8}$	0.31	0.16	0.10	0.08	0.06	0.05	0.04	0.04	0.03	0.03
$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{5}{8}$	0.77	0.39	0.26	0.19	0.15	0.13	0.11	0.10	0.09	0.08
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{8}$	0.20	0.098	0.065	0.049	0.039	0.033	0.028	0.024	0.022	0.020
$1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{4}$	0.36	0.18	0.12	0.09	0.072	0.060	0.051	0.045	0.040	0.036
1 × 1 × $\frac{1}{8}$	0.13	0.065	0.043	0.033	0.026	0.022	0.019	0.016	0.014	0.013
1 × 1 × $\frac{3}{16}$	0.17	0.085	0.057	0.043	0.034	0.028	0.024	0.021	0.019	0.017
$\frac{3}{4} \times \frac{3}{4} \times \frac{1}{8}$	0.07	0.035	0.023	0.018	0.014	0.012	0.010	0.009	0.008	0.007
$\frac{3}{4} \times \frac{3}{4} \times \frac{3}{16}$	0.095	0.048	0.032	0.024	0.019	0.016	0.014	0.012	0.011	0.010

Safe Loads include weight of Angle. Maximum fiber strain
12,000 lbs. per square inch. Neutral axis through center of gravity
parallel to one leg.

STEEL ANGLES.

SAFE LOADS, IN TONS OF 2,000 LBS., UNIFORMLY
DISTRIBUTED, FOR ANGLES, WITH
UNEQUAL LEGS.
LONG LEG VERTICAL.

Size of Angle.	DISTANCE BETWEEN SUPPORTS IN FEET.									
	1	2	3	4	5	6	7	8	9	10
6 × 4 × $\frac{3}{8}$	13.28	6.64	4.43	3.32	2.66	2.21	1.90	1.66	1.47	1.33
6 × 4 × $\frac{1}{2}$	26.60	13.30	8.87	6.65	5.32	4.43	3.80	3.33	2.96	2.66
6 × 3½ × $\frac{3}{8}$	13.00	6.50	4.33	3.25	2.60	2.17	1.86	1.63	1.44	1.30
6 × 3½ × $\frac{1}{2}$	24.80	12.40	8.27	6.20	4.96	4.13	3.54	3.10	2.76	2.48
5 × 4 × $\frac{3}{8}$	9.40	4.70	3.13	2.35	1.88	1.57	1.34	1.18	1.04	0.94
5 × 4 × $\frac{1}{2}$	17.24	8.62	5.75	4.31	3.45	2.87	2.46	2.16	1.92	1.72
5 × 3½ × $\frac{3}{8}$	9.16	4.58	3.05	2.29	1.83	1.53	1.31	1.15	1.02	0.92
5 × 3½ × $\frac{1}{2}$	16.88	8.44	5.63	4.22	3.38	2.81	2.41	2.11	1.88	1.69
5 × 3 × $\frac{3}{8}$	8.92	4.46	2.97	2.23	1.78	1.49	1.27	1.12	0.99	0.89
5 × 3 × $\frac{1}{2}$	16.52	8.26	5.51	4.13	3.30	2.75	2.36	2.07	1.84	1.65
4 × 3½ × $\frac{3}{8}$	6.00	3.00	2.00	1.50	1.20	1.00	0.86	0.75	0.67	0.60
4 × 3½ × $\frac{1}{2}$	10.92	5.46	3.64	2.73	2.18	1.82	1.56	1.37	1.21	1.09
4 × 3 × $\frac{3}{8}$	5.72	2.86	1.91	1.43	1.14	0.95	0.82	0.72	0.64	0.57
4 × 3 × $\frac{1}{2}$	10.64	5.32	3.55	2.66	2.13	1.77	1.52	1.33	1.18	1.06
3½ × 2½ × $\frac{3}{8}$	5.04	2.52	1.68	1.26	1.01	0.84	0.72	0.63	0.56	0.50
3½ × 2½ × $\frac{1}{2}$	9.16	4.58	3.05	2.29	1.83	1.53	1.31	1.15	1.02	0.92
3½ × 3 × $\frac{3}{8}$	4.36	2.18	1.45	1.09	0.87	0.73	0.62	0.55	0.48	0.44
3½ × 3 × $\frac{1}{2}$	8.12	4.06	2.71	2.03	1.62	1.35	1.16	1.02	0.90	0.81
3½ × 2½ × $\frac{1}{4}$	3.00	1.50	1.00	0.75	0.60	0.50	0.43	0.38	0.33	0.30
3½ × 2½ × $\frac{1}{2}$	5.84	2.92	1.95	1.46	1.17	0.97	0.83	0.73	0.65	0.58
3 × 2½ × $\frac{1}{4}$	2.24	1.12	0.75	0.56	0.45	0.37	0.32	0.28	0.25	0.22
3 × 2½ × $\frac{1}{2}$	4.12	2.06	1.37	1.03	0.82	0.69	0.59	0.52	0.46	0.41
3½ × 2 × $\frac{1}{4}$	2.04	1.02	0.68	0.51	0.41	0.34	0.29	0.26	0.23	0.20
3½ × 2 × $\frac{1}{2}$	4.64	2.32	1.55	1.16	0.93	0.77	0.66	0.58	0.52	0.46
3 × 2 × $\frac{3}{16}$	3.36	1.68	1.12	0.84	0.67	0.56	0.48	0.42	0.37	0.34
3 × 2 × $\frac{1}{2}$	4.00	2.00	1.33	1.00	0.80	0.67	0.57	0.50	0.44	0.40
2½ × 2 × $\frac{3}{16}$	1.16	0.58	0.39	0.29	0.23	0.19	0.17	0.15	0.13	0.12
2½ × 2 × $\frac{1}{2}$	2.84	1.42	0.95	0.71	0.57	0.47	0.41	0.36	0.32	0.28
1½ × 1½ × $\frac{5}{16}$	0.84	0.42	0.28	0.21	0.17	0.14	0.12	0.11	0.09	0.08
1½ × $\frac{3}{8}$ × $\frac{1}{8}$	0.23	0.12	0.08	0.06	0.05	0.04	0.03	0.03	0.03	0.02
1 × $\frac{3}{8}$ × $\frac{1}{8}$	0.11	0.06	0.04	0.03	0.02	0.02	0.02	0.01	0.01	0.01

Safe Loads include weight of Angle. Maximum fiber strain of 12,000 lbs. per square inch. Neutral axis through centre of gravity parallel to short leg.

STEEL ANGLES.

SAFE LOADS, IN TONS OF 2,000 LBS., UNIFORMLY
DISTRIBUTED, FOR ANGLES, WITH
UNEQUAL LEGS.

SHORT LEG VERTICAL.

Size of Angle.	DISTANCE BETWEEN SUPPORTS IN FEET.									
	1	2	3	4	5	6	7	8	9	10
6 × 4 × $\frac{3}{8}$	6.40	3.20	2.13	1.60	1.28	1.07	0.91	0.80	0.71	0.64
6 × 4 × $\frac{1}{2}$	12.60	6.30	4.20	3.15	2.52	2.10	1.80	1.58	1.40	1.26
6 × 3½ × $\frac{3}{8}$	4.92	2.46	1.64	1.23	0.98	0.82	0.70	0.62	0.55	0.49
6 × 3½ × $\frac{1}{2}$	9.64	4.82	3.21	2.41	1.93	1.61	1.38	1.21	1.07	0.96
5 × 4 × $\frac{3}{8}$	6.28	3.14	2.09	1.57	1.26	1.05	0.90	0.79	0.70	0.63
5 × 4 × $\frac{1}{2}$	11.44	5.72	3.81	2.86	2.29	1.91	1.63	1.43	1.27	1.14
5 × 3½ × $\frac{3}{8}$	4.80	2.40	1.60	1.20	0.96	0.80	0.69	0.60	0.53	0.48
5 × 3½ × $\frac{1}{2}$	8.72	4.36	2.91	2.18	1.74	1.45	1.25	1.09	0.97	0.87
5 × 3 × $\frac{3}{8}$	3.56	1.78	1.19	0.89	0.71	0.59	0.51	0.45	0.40	0.36
5 × 3 × $\frac{1}{2}$	6.44	3.22	2.15	1.61	1.29	1.07	0.92	0.81	0.72	0.64
4 × 3½ × $\frac{3}{8}$	4.72	2.36	1.57	1.18	0.94	0.79	0.67	0.59	0.52	0.47
4 × 3½ × $\frac{1}{2}$	8.52	4.26	2.84	2.13	1.70	1.42	1.22	1.07	0.95	0.85
4 × 3 × $\frac{3}{8}$	3.40	1.70	1.13	0.85	0.68	0.57	0.49	0.43	0.38	0.34
4 × 3 × $\frac{1}{2}$	6.24	3.12	2.08	1.56	1.25	1.04	0.89	0.78	0.69	0.62
3½ × 2½ × $\frac{3}{8}$	2.64	1.32	0.88	0.66	0.53	0.44	0.38	0.33	0.29	0.26
3½ × 2½ × $\frac{1}{2}$	4.72	2.36	1.57	1.18	0.94	0.79	0.67	0.59	0.52	0.47
3½ × 3 × $\frac{3}{8}$	3.32	1.66	1.11	0.83	0.66	0.55	0.47	0.42	0.37	0.33
3½ × 3 × $\frac{1}{2}$	6.08	3.04	2.03	1.52	1.22	1.01	0.87	0.76	0.68	0.61
3½ × 2½ × $\frac{3}{8}$	1.64	0.82	0.55	0.41	0.33	0.27	0.23	0.21	0.18	0.16
3½ × 2½ × $\frac{1}{2}$	3.24	1.62	1.08	0.81	0.65	0.54	0.46	0.41	0.36	0.32
3 × 2½ × $\frac{3}{8}$	1.60	0.80	0.53	0.40	0.32	0.27	0.23	0.20	0.18	0.16
3 × 2½ × $\frac{1}{2}$	2.92	1.46	0.97	0.73	0.58	0.49	0.42	0.37	0.32	0.29
3½ × 2 × $\frac{3}{8}$	0.84	0.42	0.28	0.21	0.17	0.14	0.12	0.11	0.09	0.08
3½ × 2 × $\frac{1}{2}$	1.92	0.96	0.64	0.48	0.38	0.32	0.27	0.24	0.21	0.19
3 × 2 × $\frac{3}{8}$	0.80	0.40	0.27	0.20	0.16	0.13	0.11	0.10	0.09	0.08
3 × 2 × $\frac{1}{2}$	1.88	0.94	0.63	0.47	0.38	0.31	0.27	0.24	0.21	0.19
2½ × 2 × $\frac{3}{8}$	0.76	0.38	0.25	0.19	0.15	0.13	0.11	0.10	0.08	0.08
2½ × 2 × $\frac{1}{2}$	1.87	0.94	0.62	0.47	0.37	0.31	0.27	0.23	0.21	0.19
1½ × 1½ × $\frac{3}{8}$	0.37	0.19	0.12	0.09	0.07	0.06	0.05	0.05	0.04	0.04
1½ × $\frac{3}{8}$ × $\frac{3}{8}$	0.10	0.05	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01
1 × $\frac{3}{8}$ × $\frac{3}{8}$	0.048	0.024	0.016	0.012	0.010	0.008	0.007	0.006	0.005	0.005

Safe Loads include weight of Angle. Maximum fiber strain of 12,000 lbs. per square inch. Neutral axis through centre of gravity parallel to long leg.

STEEL TEES.

WEIGHTS AND DIMENSIONS OF TEES.

Section	Size in Inches.		Thickness of Metal.				Weight
Number	Flange	Stem.	Flange.		Stem.		per Foot.
T 20	4 in.	5 in.	$\frac{1}{2}$ in.	to $\frac{5}{8}$ in.	$\frac{1}{2}$ in.	to $\frac{5}{8}$ in.	16.00
T 21	4 "	4 $\frac{1}{2}$ "	$\frac{1}{2}$ "	" "	$\frac{1}{2}$ "	" "	15.50
T 22	4 "	4 $\frac{1}{2}$ "	$\frac{1}{2}$ "	" "	$\frac{1}{2}$ "	" "	15.00
T 1	4 "	4 "	$\frac{1}{2}$ "	" "	$\frac{1}{2}$ "	" "	14.00
T 2	4 "	4 "	$\frac{7}{16}$ "	" "	$\frac{7}{16}$ "	" "	12.00
T 29	3 $\frac{1}{2}$ "	4 "	$\frac{3}{8}$ "	" "	$\frac{3}{8}$ "	" "	9.90
T 30	3 $\frac{1}{2}$ "	4 "	$\frac{1}{2}$ "	" "	$\frac{1}{2}$ "	" "	12.80
T 3	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	$\frac{7}{16}$ "	" "	$\frac{7}{16}$ "	" "	10.40
T 4	3 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	$\frac{3}{8}$ "	" "	$\frac{3}{8}$ "	" "	9.30
T 23	3 $\frac{1}{2}$ "	3 "	$\frac{7}{16}$ "	" "	$\frac{7}{16}$ "	" "	9.80
T 24	3 $\frac{1}{2}$ "	3 "	$\frac{3}{8}$ "	" "	$\frac{3}{8}$ "	" "	9.00
T 26	3 "	3 $\frac{1}{2}$ "	$\frac{7}{16}$ "	" "	$\frac{7}{16}$ "	" "	9.00
T 25	3 "	3 $\frac{1}{2}$ "	$\frac{3}{8}$ "	" "	$\frac{3}{8}$ "	" "	8.50
T 5	3 "	3 "	$\frac{3}{8}$ "	" "	$\frac{3}{8}$ "	" "	7.85
T 6	3 "	3 "	$\frac{5}{16}$ "	" "	$\frac{5}{16}$ "	" "	6.60
T 7	2 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	$\frac{3}{8}$ "	" "	$\frac{3}{8}$ "	" "	6.32
T 8	2 $\frac{1}{2}$ "	2 $\frac{1}{2}$ "	$\frac{5}{16}$ "	" "	$\frac{5}{16}$ "	" "	5.40
T 28	2 $\frac{1}{2}$ "	2 "	$\frac{5}{16}$ "	" "	$\frac{5}{16}$ "	" "	4.80
T 9	2 $\frac{1}{4}$ "	2 $\frac{1}{4}$ "	$\frac{5}{16}$ "	" "	$\frac{5}{16}$ "	" "	4.62
T 10	2 $\frac{1}{4}$ "	2 $\frac{1}{4}$ "	$\frac{1}{2}$ "	" "	$\frac{1}{2}$ "	" "	4.12
T 11	2 "	2 "	$\frac{1}{4}$ "	" "	$\frac{1}{4}$ "	" "	3.50
T 27	2 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	$\frac{1}{4}$ "	" "	$\frac{1}{4}$ "	" "	3.90
T 13	1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	$\frac{1}{4}$ "	" "	$\frac{1}{4}$ "	" "	3.00
T 12	1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	$\frac{3}{16}$ "	" "	$\frac{3}{16}$ "	" "	2.33
T 14	1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	$\frac{1}{4}$ "	" "	$\frac{1}{4}$ "	" "	2.62
T 15	1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	$\frac{3}{16}$ "	" "	$\frac{3}{16}$ "	" "	1.90
T 16	1 $\frac{1}{4}$ "	1 $\frac{1}{4}$ "	$\frac{1}{4}$ "	" "	$\frac{1}{4}$ "	" "	1.95
T 17	1 $\frac{1}{4}$ "	1 $\frac{1}{4}$ "	$\frac{3}{16}$ "	" "	$\frac{3}{16}$ "	" "	1.55
T 18	1 "	1 "	$\frac{3}{16}$ "	" "	$\frac{3}{16}$ "	" "	1.25
T 19	1 "	1 "	$\frac{1}{8}$ "	" "	$\frac{1}{8}$ "	" "	0.90

STEEL TEES.

SAFE LOADS, IN TONS OF 2,000 LBS., UNIFORMLY DISTRIBUTED, FOR TEES.

Section No.	Size flange by stem	DISTANCE BETWEEN SUPPORTS IN FEET.									
		1	2	3	4	5	6	7	8	9	10
T20	4 × 5	13.40	6.70	4.47	3.35	2.68	2.23	1.91	1.68	1.49	1.34
T21	4 × 4½	12.22	6.11	4.07	3.06	2.44	2.04	1.75	1.53	1.36	1.22
T22	4 × 4	11.03	5.51	3.67	2.76	2.20	1.84	1.57	1.38	1.22	1.10
T1	4 × 4	8.75	4.37	2.92	2.19	1.75	1.46	1.25	1.09	0.97	0.88
T2	4 × 4	7.71	3.86	2.57	1.93	1.54	1.29	1.10	0.96	0.86	0.77
T29	3½ × 4	6.20	3.10	2.07	1.55	1.24	1.03	0.89	0.78	0.69	0.62
T30	3½ × 4	7.92	3.96	2.64	1.98	1.58	1.32	1.13	0.99	0.88	0.79
T3	3½ × 3½	5.53	2.77	1.84	1.38	1.11	0.92	0.79	0.69	0.61	0.55
T4	3½ × 3½	4.79	2.39	1.60	1.20	0.96	0.80	0.69	0.60	0.53	0.48
T23	3½ × 3	4.09	2.04	1.36	1.02	0.82	0.68	0.58	0.51	0.45	0.41
T24	3½ × 3	3.54	1.77	1.18	0.88	0.71	0.59	0.51	0.44	0.39	0.35
T26	3 × 3½	5.39	2.69	1.80	1.35	1.08	0.90	0.77	0.67	0.60	0.54
T25	3 × 3½	4.67	2.33	1.56	1.17	0.93	0.78	0.67	0.58	0.52	0.47
T5	3 × 3	3.58	1.79	1.19	0.90	0.72	0.60	0.51	0.45	0.40	0.36
T6	3 × 3	3.08	1.54	1.03	0.77	0.62	0.51	0.44	0.38	0.34	0.31
T7	2½ × 2½	2.44	1.22	0.81	0.61	0.49	0.41	0.35	0.30	0.27	0.24
T8	2½ × 2½	2.09	1.04	0.70	0.52	0.42	0.35	0.30	0.26	0.23	0.21
T28	2½ × 2	1.27	0.64	0.42	0.32	0.25	0.21	0.18	0.16	0.14	0.13
T9	2¼ × 2¼	1.60	0.80	0.53	0.40	0.32	0.27	0.23	0.20	0.18	0.16
T10	2¼ × 2¼	1.31	0.65	0.44	0.33	0.26	0.22	0.19	0.16	0.15	0.13
T11	2 × 2	1.02	0.51	0.34	0.26	0.20	0.17	0.15	0.13	0.11	0.10
T27	2½ × 1¾	0.77	0.39	0.26	0.19	0.15	0.13	0.11	0.10	0.09	0.08
T13	1¾ × 1¾	0.77	0.38	0.26	0.19	0.15	0.13	0.11	0.10	0.09	0.08
T12	1¾ × 1¾	0.51	0.26	0.17	0.13	0.10	0.09	0.07	0.06	0.06	0.05
T14	1½ × 1½	0.55	0.28	0.18	0.14	0.11	0.09	0.08	0.07	0.06	0.06
T15	1½ × 1½	0.46	0.23	0.15	0.11	0.09	0.08	0.07	0.06	0.05	0.05
T16	1¼ × 1¼	0.39	0.20	0.13	0.10	0.08	0.07	0.06	0.05	0.04	0.04
T17	1¼ × 1¼	0.29	0.15	0.10	0.07	0.06	0.05	0.04	0.04	0.03	0.03
T18	1 × 1	0.19	0.10	0.06	0.05	0.04	0.03	0.03	0.02	0.02	0.02
T19	1 × 1	0.14	0.07	0.05	0.03	0.03	0.02	0.02	0.02	0.02	0.01

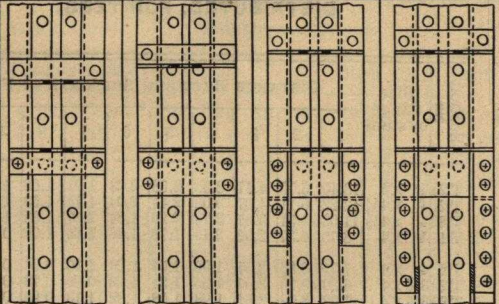
Safe Loads include weight of Tees. Maximum fiber strain, 12,000 lbs. per square inch.

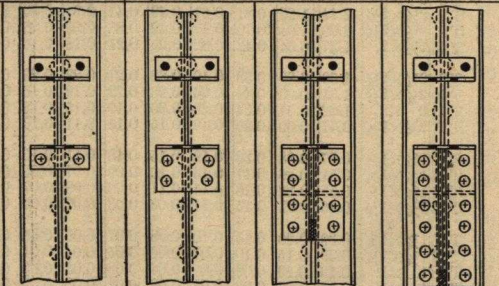
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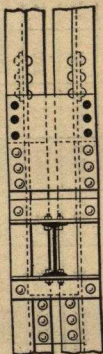
CONNECTIONS FOR STANDARD Z BAR COLUMNS.

The number of tons indicated denotes the end reactions of load on beams, for columns of $\frac{5}{16}$ " metal and above; for $\frac{1}{4}$ " metal reduce them by 15 per cent.

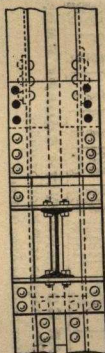
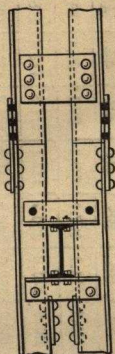
Sketch of Connections				
	4.4 Tons	8.8 Tons	17.7 Tons	26.5 Tons
Reaction	4.4 Tons	8.8 Tons	17.7 Tons	26.5 Tons
SIZE AND WEIGHT OF MATERIAL FOR CONNECTIONS				
BILL OF MATERIAL FOR ONE CONNECTION	2-Ls $3\frac{1}{2} \times 3 \times \frac{3}{8}$ -1'-1" 4- $\frac{3}{4}$ " RIVETS	1-L $3\frac{1}{2} \times 3 \times \frac{3}{8}$ -1'-1" 1-L $6 \times 3\frac{1}{2} \times \frac{3}{8}$ -1'-1" 6- $\frac{3}{4}$ " RIVETS	1-L $3\frac{1}{2} \times 3 \times \frac{3}{8}$ -1'-1" 1-L $6 \times 3\frac{1}{2} \times \frac{3}{8}$ -1'-1" 2-Ls $3 \times 3 \times \frac{3}{8}$ -0'-11 $\frac{1}{2}$ " 2-FILLS $3 \times \frac{3}{8}$ -0'-5 $\frac{1}{2}$ " 10- $\frac{3}{4}$ " RIVETS	1-L $3\frac{1}{2} \times 3 \times \frac{3}{8}$ -1'-1" 1-L $6 \times 3\frac{1}{2} \times \frac{3}{8}$ -1'-1" 2-Ls $3 \times 3 \times \frac{3}{8}$ -1'-5 $\frac{1}{2}$ " 2-FILLS $3 \times \frac{3}{8}$ -0'-11 $\frac{1}{2}$ " 14- $\frac{3}{4}$ " RIVETS
Weight	19 Lbs.	24 Lbs.	44 Lbs.	63 Lbs.

Sketch of Connections				
	4.4 Tons	8.8 Tons	17.7 Tons	26.5 Tons
Reaction	4.4 Tons	8.8 Tons	17.7 Tons	26.5 Tons
SIZE AND WEIGHT OF MATERIAL FOR CONNECTIONS				
BILL OF MATERIAL FOR ONE CONNECTION	2-Ls $3\frac{1}{2} \times 3 \times \frac{3}{8}$ -0'-8" 4- $\frac{3}{4}$ " RIVETS	1-L $3\frac{1}{2} \times 3 \times \frac{3}{8}$ -0'-8" 1-L $6 \times 3\frac{1}{2} \times \frac{3}{8}$ -0'-8" 6- $\frac{3}{4}$ " RIVETS	1-L $3\frac{1}{2} \times 3 \times \frac{3}{8}$ -0'-8" 1-L $6 \times 3\frac{1}{2} \times \frac{3}{8}$ -0'-8" 2-4 x $3 \times \frac{3}{8}$ -0'-11 $\frac{1}{2}$ " 1-FILL $6 \times \frac{3}{8}$ -0'-8" 10- $\frac{3}{4}$ " RIVETS	1-L $3\frac{1}{2} \times 3 \times \frac{3}{8}$ -0'-8" 1-L $6 \times 3\frac{1}{2} \times \frac{3}{8}$ -0'-8" 2-Ls $4 \times 3 \times \frac{3}{8}$ -1'-5 $\frac{1}{2}$ " 1-FILL $8 \times \frac{3}{8}$ -0'-11 $\frac{1}{2}$ " 14- $\frac{3}{4}$ " RIVETS
Weight	12 Lbs.	16 Lbs.	40 Lbs.	56 Lbs.

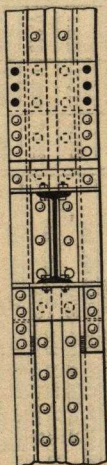
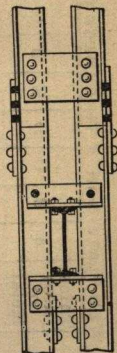
DETAILS OF SPLICES AND CONNECTIONS FOR
I BEAMS TO CONSTANT DIMENSIONS
Z BAR COLUMNS.



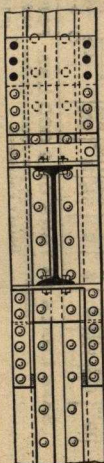
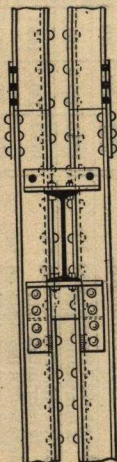
$\frac{5}{16}$ " Metal and above 4.4 tons.



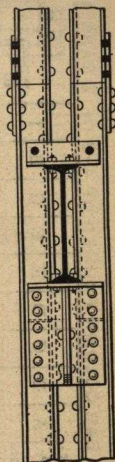
$\frac{5}{16}$ " Metal and above 8.8 tons.



$\frac{5}{16}$ " Metal and above 17.7 tons.



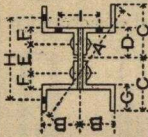
$\frac{5}{16}$ " Metal and above 26.5 tons.



Rivets and bolts $\frac{3}{4}$ " diameter.
Splice plates 13" by thickness of Z' by 1'6" long.

12-IN. Z BAR COLUMN FORMED OF 4-6 IN. Z BARS AND 1 WEB PLATE 8-IN. X THICKNESS OF Z BARS.

Thick- ness of Metal.	A	B	C	D	E	F	G	H	I	Thick- ness of Metal.	A	B	C	D	E	F	G	H	I	Diameter of Bolt or Rivet = $\frac{1}{2}$ "
$\frac{3}{8}$ "	18"	6 $\frac{3}{8}$ "	7 $\frac{1}{8}$ "	4	4	2	3 $\frac{1}{2}$ "	11 $\frac{1}{4}$ "	6"	$\frac{3}{8}$ "	18 $\frac{1}{2}$ "	6 $\frac{3}{8}$ "	7 $\frac{1}{8}$ "	4	4	2	3 $\frac{1}{2}$ "	10 $\frac{3}{4}$ "	6 $\frac{1}{2}$ "	$\frac{3}{8}$ "
$\frac{7}{16}$ "	18 $\frac{1}{2}$ "	6 $\frac{9}{16}$ "	7 $\frac{1}{8}$ "	4	4	2	3 $\frac{9}{16}$ "	11 $\frac{1}{8}$ "	6 $\frac{5}{8}$ "	$\frac{7}{16}$ "	18 $\frac{1}{2}$ "	6 $\frac{9}{16}$ "	7 $\frac{1}{8}$ "	4	4	2	3 $\frac{9}{16}$ "	10 $\frac{3}{4}$ "	6 $\frac{5}{8}$ "	$\frac{7}{16}$ "
$\frac{1}{2}$ "	19	6 $\frac{3}{4}$ "	7 $\frac{1}{8}$ "	4	4	2	3 $\frac{5}{8}$ "	11	6 $\frac{3}{4}$ "	$\frac{1}{2}$ "	18 $\frac{1}{2}$ "	6 $\frac{3}{4}$ "	7 $\frac{1}{8}$ "	4	4	2	3 $\frac{5}{8}$ "	10 $\frac{3}{4}$ "	6 $\frac{3}{4}$ "	$\frac{1}{2}$ "



SAFE LOADS IN TONS OF 2,000 LBS. FOR Z BAR COLUMNS WITH SQUARE ENDS.

Allowable Strains per Square Inch = $\begin{cases} 12,000 \text{ lbs. for Lengths of 90 Radii or under.} \\ 17,100 \cdot 57 \frac{1}{r} \text{ for lengths over 90 Radii.} \end{cases}$
 Safety Factor = 4

LENGTH OF COLUMN IN FEET.

	26 and under	28	30	32	34	36	38	40	42	44	46	48	50
$\frac{3}{8}$ " Metal = 72.7 lbs. = 21.4 sq. in. R minimum = 3.67.	128.3	127.0	123.0	119.0	115.1	111.1	107.1	103.1	99.1	95.1	91.2	87.2	83.2
$\frac{7}{16}$ " Metal = 85.2 lbs. = 25.0 sq. in. R minimum = 3.67.	150.3	149.7	145.1	140.5	135.9	131.3	126.7	122.1	117.5	112.9	108.3	103.6	99.1
$\frac{1}{2}$ " Metal = 97.8 lbs. = 28.8 sq. in. R minimum = 3.77.	172.6	172.5	167.6	162.4	157.2	152.0	146.8	141.5	136.3	131.1	126.2	120.7	115.5
$\frac{5}{8}$ " Metal = 104.7 lbs. = 30.8 sq. in. R minimum = 3.65.	184.8	182.6	176.8	171.0	165.3	159.5	153.7	148.0	142.2	136.4	130.6	124.9	119.1
$\frac{3}{4}$ " Metal = 116.8 lbs. = 34.4 sq. in. R minimum = 3.70.	206.4	205.1	198.7	192.4	186.0	179.7	173.3	167.0	160.6	154.3	147.9	141.6	135.2
$1\frac{1}{8}$ " Metal = 129.1 lbs. = 38.0 sq. in. R minimum = 3.71.	227.7	226.7	219.7	212.7	205.7	198.7	191.7	184.7	177.7	170.7	163.7	156.7	149.7
$1\frac{3}{8}$ " Metal = 140.6 lbs. = 41.6 sq. in. R minimum = 3.70.	249.7	248.1	240.4	232.7	225.1	217.4	209.7	202.0	194.3	186.6	178.9	171.2	163.5

12" Z BAR COLUMN.

$\frac{3}{8}$ " Metal = 72.7 lbs. = 21.4 sq. in.
 R minimum = 3.67.
 $\frac{7}{16}$ " Metal = 85.2 lbs. = 25.0 sq. in.
 R minimum = 3.67.
 $\frac{1}{2}$ " Metal = 97.8 lbs. = 28.8 sq. in.
 R minimum = 3.77.
 $\frac{5}{8}$ " Metal = 104.7 lbs. = 30.8 sq. in.
 R minimum = 3.65.
 $\frac{3}{4}$ " Metal = 116.8 lbs. = 34.4 sq. in.
 R minimum = 3.70.
 $1\frac{1}{8}$ " Metal = 129.1 lbs. = 38.0 sq. in.
 R minimum = 3.71.
 $1\frac{3}{8}$ " Metal = 140.6 lbs. = 41.6 sq. in.
 R minimum = 3.70.

10-IN. Z BAR COLUMN FORMED OF 4-5 IN. Z BARS AND 1 WEB PLATE 7-IN. X THICKNESS OF Z BARS.

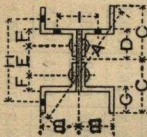
10-IN. Z BAR COLUMN FORMED OF 4-5 IN. Z BARS AND 1 IN. PLATE													Thick- ness of Metal.	SAFE LOADS IN TONS OF 2,000 LBS. FOR Z BAR COLUMNS WITH SQUARE ENDS.								
Diameter of Bolt or Rivet = $\frac{1}{4}$ "		Thick- ness of Metal.		A	B	C	D	E	F	G	H	I		Diameter of Bolt or Rivet = $\frac{1}{2}$ "								
$\frac{1}{8}$ "		$\frac{1}{8}$ "		16 $\frac{5}{8}$	5 $\frac{3}{8}$	6 $\frac{3}{8}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	1 $\frac{1}{2}$	3 $\frac{3}{8}$	9 $\frac{1}{2}$	5 $\frac{7}{8}$	$\frac{1}{8}$ "									
$\frac{3}{8}$ "		$\frac{3}{8}$ "		16 $\frac{1}{2}$	5 $\frac{3}{4}$	6 $\frac{3}{4}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	1 $\frac{1}{2}$	3 $\frac{3}{4}$	9 $\frac{1}{2}$	5 $\frac{7}{8}$	$\frac{3}{8}$ "									
$\frac{1}{2}$ "		$\frac{1}{2}$ "		16 $\frac{3}{4}$	5 $\frac{5}{8}$	6 $\frac{5}{8}$	3 $\frac{1}{2}$	3 $\frac{1}{2}$	1 $\frac{1}{2}$	3 $\frac{3}{4}$	9 $\frac{1}{2}$	5 $\frac{7}{8}$	$\frac{1}{2}$ "									

SAFE LOADS IN TONS OF 2,000 LBS. FOR Z BAR COLUMNS WITH SQUARE ENDS.
 Allowable Strains per Square Inch = $\frac{1}{12,000}$ lbs. for Lengths of 90 Radii or under.
 Safety Factor = $\frac{1}{17,100-57}$ for lengths over 90 Radii.

10' Z BAR COLUMN.		LENGTH OF COLUMN IN FEET.															
		22 and under	24	26	28	30	32	34	36	38	40	42	44	46	48	50	
$\frac{1}{8}$ " Metal=53.7 lbs.=15.8 sq. in. R minimum=3.08.	94.7	92.8	89.3	85.8	82.3	78.8	75.3	71.8	68.3	64.8	61.3	57.7	54.2	50.7	47.2		
$\frac{3}{8}$ " Metal=64.7 lbs.=19.0 sq. in. R minimum=3.13.	114.2	112.6	108.6	104.4	100.2	96.1	91.9	87.8	83.6	79.4	75.3	71.1	67.0	62.8	58.6		
$\frac{1}{2}$ " Metal=75.8 lbs.=22.3 sq. in. R minimum=3.18.	133.9	133.1	128.3	123.5	118.7	113.8	109.1	104.3	99.5	94.7	89.9	85.1	80.3	75.5	70.7		
$\frac{5}{8}$ " Metal=82.1 lbs.=24.1 sq. in. R minimum=3.06.	144.6	141.4	136.0	130.6	125.2	119.9	114.5	109.1	103.7	98.3	92.9	87.5	82.2	76.8	71.4		
$\frac{3}{4}$ " Metal=92.8 lbs.=27.3 sq. in. R minimum=3.11.	163.8	161.4	155.4	149.4	143.4	137.3	131.3	125.3	119.3	113.3	107.3	101.3	95.3	89.3	83.3		
$\frac{7}{8}$ " Metal=103.7 lbs.=30.5 sq. in. R minimum=3.16.	183.0	181.6	174.9	168.3	161.7	155.1	148.5	141.9	135.3	128.7	122.1	115.5	108.9	102.3	95.7		
$1\frac{1}{8}$ " Metal=114.6 lbs.=33.7 sq. in. R minimum=3.22.	202.2	202.2	195.1	187.9	180.7	173.6	166.4	159.3	152.1	145.0	137.8	130.7	123.5	116.3	109.2		

8-IN. Z BAR COLUMN FORMED OF 4-4 IN. Z BARS AND 1 WEB PLATE 6 I-2 IN. X THICKNESS OF Z BARS.

Thick- ness of Metal.	A	B	C	D	E	F	G	H	I	Thick- ness of Metal.	A	B	C	D	E	F	G	H	I	Diameter of Bolt OR Rivet = $\frac{1}{4}$ "
$\frac{1}{4}$ "	14 1/8	4 1/8	6 1/8	3 3/4	3	1 3/4	3 1/8	9 1/2	4 1/4	1 1/2"	14 1/8	4 1/8	6 1/8	3 3/4	3	1 3/4	3 1/8	9 1/2	4 1/4	1 1/2"
$\frac{1}{8}$ "	14 3/4	4 3/4	6 3/4	3 3/4	3	1 3/4	3 1/8	9 3/4	4 3/8	1 5/8"	14 3/4	4 3/4	6 3/4	3 3/4	3	1 3/4	3 1/8	9 3/4	4 3/8	1 5/8"
$\frac{3}{8}$ "	14 1/2	4 1/2	6 1/2	3 1/2	3	1 1/2	3 1/8	9 1/4	4 1/2	1 3/4"	14 1/2	4 1/2	6 1/2	3 1/2	3	1 1/2	3 1/8	9 1/4	4 1/2	1 3/4"



SAFE LOADS IN TONS OF 2,000 LBS. FOR Z BAR COLUMNS WITH SQUARE ENDS.

Allowable Strains per Square Inch = $\begin{cases} 12,000 \text{ lbs. for Lengths of 90 Radii or under.} \\ 17,100-57 \frac{1}{r} \text{ for lengths over 90 Radii.} \end{cases}$
 Safety Factor = 4

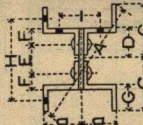
LENGTH OF COLUMN IN FEET.										
18 and under	20	22	24	26	28	30	32	34	36	38
67.5	65.0	61.9	58.8	55.7	52.6	49.4	46.3	43.2	40.1	37.0
84.8	82.5	78.7	74.8	71.0	67.1	63.3	59.5	55.6	51.8	48.0
102.4	100.5	95.9	91.3	86.8	82.3	77.7	73.2	68.7	64.1	59.6
112.2	107.7	102.5	97.2	92.0	86.8	81.6	76.4	71.1	65.9	60.7
129.0	125.0	119.1	113.2	107.3	101.5	95.6	89.7	83.8	77.9	72.1
145.8	142.8	136.3	129.8	123.4	116.9	110.4	103.9	97.4	90.9	84.4
163.2	160.9	153.8	146.7	139.4	132.4	125.2	118.1	110.9	103.8	96.5

8' Z BAR COLUMN.

$\frac{1}{4}$ " Metal = 38.3 lbs. = 11.3 sq. in. R minimum = 2.47.
$\frac{1}{8}$ " Metal = 48.1 lbs. = 14.1 sq. in. R minimum = 2.52.
$\frac{3}{8}$ " Metal = 58.0 lbs. = 17.1 sq. in. R minimum = 2.57.
$\frac{1}{2}$ " Metal = 63.6 lbs. = 18.7 sq. in. R minimum = 2.45.
$\frac{3}{4}$ " Metal = 73.1 lbs. = 21.5 sq. in. R minimum = 2.50.
$\frac{1}{2}$ " Metal = 82.7 lbs. = 24.3 sq. in. R minimum = 2.56.
$\frac{3}{4}$ " Metal = 92.5 lbs. = 27.2 sq. in. R minimum = 2.60.

6-IN. Z BAR COLUMN FORMED OF 4-3 IN. Z BARS AND 1 WEB PLATE 53-4 IN. X THICKNESS OF Z BARS.

Thick- ness of Metal.	A	B	C	D	E	F	G	H	I	Thick- ness of Metal.	A	B	C	D	E	F	G	H	I	Diameter of Bolt or Rivet = $\frac{1}{2}$ "
$\frac{1}{4}$ "	$12\frac{5}{8}$	$3\frac{1}{8}$	$5\frac{5}{8}$	$2\frac{7}{8}$	$2\frac{1}{2}$	$1\frac{5}{8}$	$2\frac{1}{4}$	$8\frac{1}{2}$	$3\frac{3}{4}$	$\frac{7}{8}$ "	$11\frac{1}{8}$	$3\frac{3}{8}$	$5\frac{1}{8}$	$2\frac{7}{8}$	$2\frac{1}{2}$	$1\frac{5}{8}$	$2\frac{1}{4}$	$8\frac{1}{2}$	$3\frac{3}{4}$	$\frac{3}{8}$ "
$\frac{1}{8}$ "	$12\frac{3}{8}$	$3\frac{1}{4}$	$5\frac{1}{4}$	$2\frac{3}{4}$	$2\frac{1}{4}$	$1\frac{1}{2}$	$2\frac{3}{8}$	$8\frac{3}{8}$	$3\frac{3}{8}$	$\frac{1}{2}$ "	12	$3\frac{1}{4}$	$5\frac{1}{4}$	$2\frac{3}{4}$	$2\frac{1}{4}$	$1\frac{1}{2}$	$2\frac{1}{8}$	$8\frac{3}{8}$	$3\frac{3}{8}$	$\frac{3}{8}$ "
$\frac{3}{8}$ "	$12\frac{1}{2}$	$3\frac{1}{2}$	$5\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$1\frac{1}{8}$	$2\frac{1}{8}$	$8\frac{1}{4}$	$3\frac{1}{2}$	$\frac{3}{8}$ "	$12\frac{1}{2}$	$3\frac{1}{2}$	$5\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	$1\frac{1}{8}$	$2\frac{1}{8}$	$7\frac{3}{4}$	$3\frac{1}{2}$	$\frac{3}{8}$ "

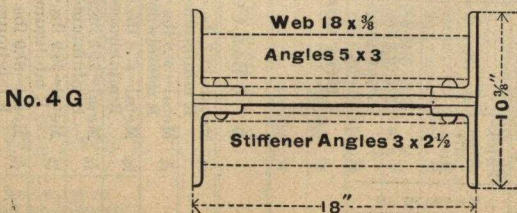
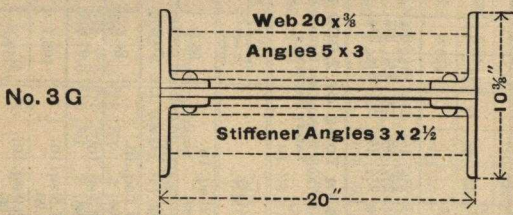
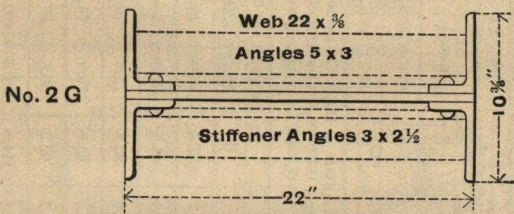
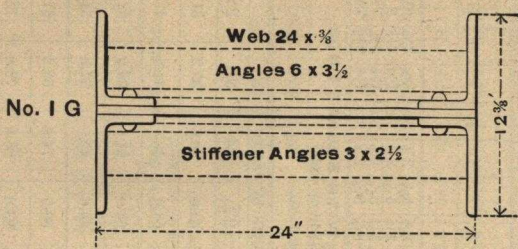


SAFE LOADS IN TONS OF 2,000 LBS. FOR Z BAR COLUMNS WITH SQUARE ENDS.

Allowable Strains per Square Inch = $\begin{cases} 12,000 \text{ lbs. for Lengths of 90 Radii or under.} \\ 17,100-57 \frac{1}{r} \text{ for lengths over 90 Radii.} \end{cases}$
 Safety Factor = 4

LENGTH OF COLUMN IN FEET.										
12 and under	14	16	18	20	22	24	26	28	30	
55.9	55.7	52.3	48.8	45.4	42.0	38.6	35.2	31.7	28.3	
70.3	70.3	66.5	62.3	58.1	53.9	49.7	45.5	41.3	37.1	
84.6	84.6	80.8	75.8	70.8	66.0	61.0	56.0	51.0	46.0	
91.8	91.2	85.6	79.9	74.2	68.6	62.9	57.3	51.6	46.0	
105.7	105.7	99.9	93.6	87.2	80.9	74.6	68.2	61.9	55.5	
119.8	119.8	114.8	107.8	100.8	93.8	86.8	79.8	72.8	65.8	
134.4	134.4	130.2	122.6	114.9	107.3	99.6	91.9	84.3	76.6	

STEEL PLATE GIRDER SECTIONS.



For Table Giving Safe Load, see Pages 83 to 88,

STEEL PLATE GIRDERS.

SAFE LOAD IN POUNDS, UNIFORMLY DISTRIBUTED.

FOR SECTIONS SEE PAGE 80.

Clear Span in feet.	No. 1 G.				No. 1 G.			
	24 X 3/8 Web Plates. 6 X 3 1/2 X 1/2 Flange Angles. 3 X 2 1/2 X 3/8 Stiffener Angles. 2 1/2 X 1/2 Fillers.				24 X 3/8 Web Plates. 6 X 3 1/2 X 1/2 Flange Angles. 3 X 2 1/2 X 3/8 Stiffener Angles. 2 1/2 X 1/2 Fillers.			
	Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.	Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.
14	143960	112065	1849	.....	115275	95775	1723	.....
15	134760	104860	1941	.....	115190	94730	1808	.....
16	126625	98480	2034	.....	114425	88965	1893	.....
17	119385	94720	2126	.....	107880	83840	1978	.....
18	112900	87720	2218	.....	102015	79235	2063	.....
19	107005	83085	2355	.....	96680	75050	2191	.....
20	101715	78925	2447	.278	91885	71275	2276	.278
21	96880	75130	2540	.305	87520	67840	2361	.305
22	92470	71660	2632	.333	83535	64705	2447	.333
23	88415	68475	2724	.363	79860	61830	2532	.363
24	84635	65495	2855	.398	76445	59125	2653	.394
25	81175	62775	2947	.426	73310	56660	2739	.426
26	77970	60250	3039	.460	70415	54375	2824	.459
27	74980	57890	3132	.494	67710	52250	2909	.494
28	72195	55695	3224	.530	65185	50265	2994	.530
29	69545	53595	3354	.567	62785	48365	3116	.567
30	67105	51675	3446	.606	60580	46620	3201	.605
31	64810	49850	3539	.645	58505	44975	3286	.645
32	62640	48140	3631	.686	56550	43430	3371	.686
33	60595	46525	3723	.728	54595	41965	3456	.728
34	58630	44970	3850	.772	52915	40545	3575	.772
35	56805	43515	3943	.817	51260	39240	3660	.816
36	55065	42145	4035	.863	49695	37995	3745	.862
37	53425	40835	4127	.910	48200	36810	3830	.909
38	51860	39590	4220	.959	46785	35685	3915	.958

The above values are found on the moments of inertia of the sections with a fiber strain of 16,000 lbs. and 12,500 lbs. respectively for steel; 1/8" rivet holes deducted. Weights of girders include 12 inches of bearing at each end, stiffeners, fillers and rivet heads

DEARBORN FOUNDRY COMPANY.

STEEL PLATE GIRDERS.

SAFE LOAD IN POUNDS, UNIFORMLY DISTRIBUTED.

FOR SECTIONS SEE PAGE 80.

Clear Span in feet.	No. 1 G.				No. 2 G.				
	24 × $\frac{3}{8}$ Web Plates. 6 × $3\frac{1}{2}$ × $\frac{3}{8}$ Flange Angles. 3 × $2\frac{1}{2}$ × $\frac{3}{8}$ Stiffener Angles. $2\frac{1}{2}$ × $\frac{3}{8}$ Fillers.				22 × $\frac{3}{8}$ Web Plates. 5 × 3 × $\frac{1}{2}$ Flange Angles. 3 × $2\frac{1}{2}$ × $\frac{3}{8}$ Stiffener Angles. $2\frac{1}{2}$ × $\frac{1}{2}$ Fillers.				
	Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.	Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.	
14	115400	89810	1598	.....	105630	85120	1618	.....	
15	108015	84015	1676	.....	102400	79620	1698	.....	
16	101495	78905	1753	.....	96200	74760	1778	.....	
17	95670	74340	1831	.....	90685	70435	1857	.....	
18	90460	70250	1909	.....	85725	66545	1937	.....	
19	85720	66530	2029	.....	81225	62995	2054	.....	
20	81465	63185	2107	.277	77185	59825	2134	.297	
21	77595	60145	2184	.305	73495	56925	2214	.326	
22	74040	57350	2262	.333	70125	54275	2294	.357	
23	70790	54790	2340	.362	67025	51835	2373	.388	
24	67745	52385	2454	.393	64130	49550	2490	.422	
25	64970	50200	2532	.425	61490	47470	2570	.456	
26	62390	48170	2609	.459	59040	45540	2650	.492	
27	59995	46285	2687	.493	56750	43740	2730	.529	
28	57755	44515	2765	.529	54630	42050	2809	.567	
29	55620	42820	2878	.566	52595	40445	2924	.607	
30	53655	41275	2956	.605	50725	38965	3004	.648	
31	51805	39805	3034	.644	48965	37575	3084	.691	
32	50070	38430	3112	.685	47305	36255	3164	.734	
33	48430	37130	3190	.727	45735	35015	3243	.780	
34	46840	35870	3300	.771	44225	33815	3356	.826	
35	45360	34700	3378	.815	42825	32705	3436	.872	
36	43975	33595	3456	.861	41495	31645	3515	.923	
37	42645	32545	3534	.908	40235	30645	3595	.974	
38	41390	31540	3612	.957	39025	29685	3675	1.026	

The above values are found on the moments of inertia of the sections with a fiber strain of 16,000 lbs. and 12,500 lbs. respectively for steel; $\frac{3}{8}$ " rivet holes deducted. Weights of girders include 12 inches of bearing at each end, stiffeners, fillers and rivet heads.

STEEL PLATE GIRDERS.
SAFE LOAD IN POUNDS, UNIFORMLY DISTRIBUTED.
FOR SECTIONS SEE PAGE 80.

Clear Span in feet.	NO. 2 G.				NO. 2 G.			
	22 × 3/8 Web Plates. 5 × 3/8 × 7/16 Flange Angles. 3 × 2 1/2 × 3/8 Stiffener Angles. 2 1/2 × 1 7/8 Fillers.				22 × 3/8 Web Plates. 5 × 3/8 × 3/8 Flange Angles. 3 × 2 1/2 × 3/8 Stiffener Angles. 2 1/2 × 3/8 Fillers.			
	Safe load, including weight of girder, for fiber strain of 15,000 lbs. pr. sq. in.	Safe load, including weight of girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.	Safe load, including weight of girder, for fiber strain of 16,000 lbs. per sq. in.	Safe load, including weight of girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.
14	99240	77180	1512	.....	88615	68915	1406	.....
15	92855	72185	1586	.....	82925	64445	1474	.....
16	87220	67780	1659	.....	77890	60510	1542	.....
17	82205	63845	1733	.....	73410	56990	1610	.....
18	77715	60315	1807	.....	69390	53830	1678	.....
19	73635	57105	1917	.....	65730	50960	1780	.....
20	69960	54220	1990	.297	62450	48380	1848	.297
21	66615	51595	2064	.326	59465	46035	1916	.326
22	63560	49180	2138	.357	56715	43875	1983	.357
23	60750	46970	2212	.388	54210	41900	2051	.388
24	58120	44890	2321	.421	51855	40035	2154	.421
25	55715	43005	2395	.456	49710	38350	2221	.456
26	53490	41250	2469	.492	47720	36780	2289	.491
27	51495	39605	2543	.529	45865	35315	2357	.529
28	49485	38085	2616	.567	44135	33945	2425	.567
29	47635	36615	2724	.607	42475	32635	2525	.607
30	45940	35270	2798	.648	40955	31425	2593	.648
31	44340	34010	2871	.690	39530	30300	2661	.690
32	42835	32815	2945	.734	38180	29230	2729	.734
33	41420	31690	3019	.780	36915	28225	2797	.779
34	40035	30595	3124	.826	35675	27235	2894	.825
35	38760	29580	3198	.874	34540	26340	2962	.873
36	37560	28630	3272	.923	33460	25470	3030	.923
37	36415	27715	3346	.973	32430	24650	3098	.973
38	35320	26840	3420	1.025	31455	23875	3166	1.025

The above values are found on the moments of inertia of the sections with a fiber strain of 16,000 lbs. and 12,500 lbs. respectively for steel; 1 3/8" rivet holes deducted. Weights of girders include 12 inches of bearing at each end, stiffeners, fillers and rivet heads.

STEEL PLATE GIRDERS.

SAFE LOAD IN POUNDS, UNIFORMLY DISTRIBUTED.

FOR SECTIONS SEE PAGE 80.

Clear Span in feet.	No. 3 G.				No. 3 G.			
	20 × $\frac{3}{8}$ Web Plates. 5 × 3 × $\frac{1}{2}$ Flange Angles. 3 × $2\frac{1}{2}$ × $\frac{3}{8}$ Stiffener Angles. $2\frac{1}{2}$ × $\frac{1}{2}$ Fillers.	Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.	20 × $\frac{3}{8}$ Web Plates. 5 × 3 × $\frac{1}{2}$ Flange Angles. 3 × $2\frac{1}{2}$ × $\frac{3}{8}$ Stiffener Angles. $2\frac{1}{2}$ × $\frac{1}{2}$ Fillers.	Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.
14	96800	75280	1548	.....	87685	68185	1443	.....
15	90575	70405	1626	.....	82045	63765	1515	.....
16	85085	66095	1703	.....	77055	59835	1586	.....
17	80180	62240	1780	.....	72625	56375	1657	.....
18	75795	58805	1857	.....	68630	53240	1728	.....
19	71795	55655	1967	.....	65020	50390	1831	.....
20	68205	52835	2044	.328	61760	47840	1902	.328
21	64940	50260	2121	.360	58795	45505	1973	.359
22	61940	47900	2199	.393	56085	43365	2044	.393
23	59195	45745	2276	.428	53585	41405	2116	.428
24	56625	43715	2386	.464	51260	39560	2218	.464
25	54275	41855	2463	.502	49130	37880	2290	.502
26	52100	40140	2540	.542	47160	36320	2361	.540
27	50065	38535	2617	.583	45320	34870	2432	.582
28	48175	37035	2694	.625	43595	33505	2503	.625
29	46365	35605	2804	.669	41955	32205	2606	.668
30	44700	34290	2881	.714	40445	31015	2677	.714
31	43140	33050	2959	.761	39030	29890	2748	.760
32	41665	31885	3036	.809	37690	28830	2820	.809
33	40275	30775	3113	.859	36430	27830	2891	.858
34	38920	29700	3220	.910	35200	26850	2990	.909
35	37675	28715	3297	.963	34070	25950	3061	.962
36	36495	27765	3374	1.017	32995	25085	3133	1.016
37	35370	26870	3451	1.073	31975	24275	3204	1.072
38	34290	26010	3528	1.130	31005	23505	3275	1.129

The above values are found on the moments of inertia of the sections with a fiber strain of 16,000 lbs. and 12,500 lbs. respectively for steel; $\frac{1}{8}$ " rivet holes deducted. Weights of girders include 12 inches of bearing at each end, stiffeners, fillers and rivet heads.

STEEL PLATE GIRDERS.

SAFE LOAD IN POUNDS, UNIFORMLY DISTRIBUTED.

FOR SECTIONS SEE PAGE 80.

Clear Span in feet.	No. 3 G.					No. 4 G.				
	20 × $\frac{3}{8}$ Web Plates. 5 × 3 × $\frac{3}{8}$ Flange Angles. 3 × 2½ × $\frac{3}{8}$ Stiffener Angles. 2½ × $\frac{7}{8}$ Fillers.					18 × $\frac{3}{8}$ Web Plates. 5 × 3 × $\frac{7}{8}$ Flange Angles. 3 × 2½ × $\frac{3}{8}$ Stiffener Angles. 2½ × $\frac{7}{8}$ Fillers.				
	Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.		Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.	
14	78180	60800	1340	.....		76545	59505	1373	.....	
15	73145	56845	1405	.....		71610	55640	1442	.....	
16	68700	53360	1470	.....		67250	52210	1511	.....	
17	64735	50245	1535	.....		63660	49160	1579	.....	
18	61180	47460	1600	.....		59870	46410	1648	.....	
19	57945	44905	1696	.....		56695	43915	1743	.....	
20	55040	42620	1761	.327		53850	41670	1812	.365	
21	52395	40545	1826	.359		51250	39630	1880	.400	
22	49970	38630	1892	.392		48870	37750	1949	.437	
23	47745	36875	1957	.427		46680	36030	2018	.476	
24	45655	35225	2053	.464		44635	34415	2115	.517	
25	43760	33730	2118	.502		42765	32935	2184	.559	
26	41995	32335	2183	.541		41035	31565	2253	.603	
27	40350	31030	2248	.582		39420	30290	2321	.648	
28	38815	29825	2313	.624		37910	29100	2390	.695	
29	37350	28660	2408	.668		36475	27945	2484	.744	
30	36005	27585	2473	.713		35150	26900	2552	.794	
31	34730	26580	2538	.760		33900	25910	2621	.846	
32	33535	25635	2603	.808		32720	24980	2690	.900	
33	32410	24740	2668	.857		31610	24090	2758	.955	
34	31320	23870	2762	.909		30535	23235	2855	1.013	
35	30300	23060	2828	.961		29535	22435	2924	1.071	
36	29335	22295	2893	1.015		28585	21685	2993	1.131	
37	28430	21560	2959	1.071		27690	20970	3061	1.193	
38	27555	20865	3023	1.128		26830	20280	3130	1.257	

The above values are found on the moments of inertia of the sections with a fiber strain of 16,000 lbs. and 12,500 lbs. respectively for steel; $\frac{11}{16}$ " rivet holes deducted. Weights of girders include 12 inches of bearing at each end, stiffeners, fillers and rivet heads.

STEEL PLATE GIRDERS.

SAFE LOAD IN POUNDS, UNIFORMLY DISTRIBUTED.

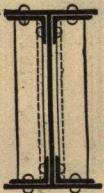
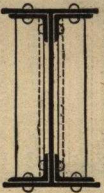
FOR SECTIONS SEE PAGE 80.

Clear Span in feet.	No. 4 G.					No. 4 G.				
	18 × ½ Web Plates. 5 × 3 × ½ Flange Angles. 3 × 2½ × ½ Stiffener Angles. 2½ × ½ Fillers.	Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.	18 × ½ Web Plates. 4 × 3 × ½ Flange Angles. 3 × 2½ × ½ Stiffener Angles. 2½ × ½ Fillers.	Safe Load, including weight of Girder, for fiber strain of 16,000 lbs. per sq. in.	Safe Load, including weight of Girder, for fiber strain of 12,500 lbs. per sq. in.	Estimated weight of Girder.	Deflection.
14	68170	52980	1271	.....		58900	45760	1179	.....	
15	63765	49525	1333	.....		55095	42775	1237	.....	
16	59875	46475	1396	.....		51725	40125	1294	.....	
17	56410	43750	1459	.....		48720	37770	1352	.....	
18	53300	41310	1521	.....		46020	35650	1409	.....	
19	50470	39080	1610	.....		43306	33506	1494	.....	
20	47925	37075	1673	.364		41360	31980	1552	.358	
21	45615	35255	1735	.400		39350	30400	1609	.392	
22	43490	33580	1798	.440		37515	28955	1667	.430	
23	41540	32040	1861	.476		35825	27615	1724	.468	
24	39710	30600	1951	.516		34240	26360	1809	.508	
25	38045	29285	2014	.558		32795	25215	1866	.550	
26	36505	28065	2076	.602		31455	24155	1924	.593	
27	35060	26920	2139	.648		30200	23170	1981	.637	
28	33710	25860	2202	.694		29030	22240	2039	.684	
29	32430	24830	2289	.743		27920	21350	2121	.732	
30	31250	23900	2351	.794		26890	20530	2178	.781	
31	30135	23015	2414	.846		25925	19765	2236	.832	
32	29085	22175	2477	.899		25015	19035	2293	.885	
33	28090	21390	2539	.955		24150	18360	2351	.939	
34	27120	20620	2629	1.011		23315	17685	2434	.996	
35	26240	19910	2692	1.070		22540	17070	2492	1.053	
36	25395	19235	2755	1.130		21800	16480	2549	1.112	
37	24580	18590	2818	1.192		21105	15925	2607	1.173	
38	23820	17980	2880	1.256		20435	15385	2664	1.236	

The above values are found on the moments of inertia of the sections with a fiber strain of 16,000 lbs. and 12,500 lbs. respectively for steel; ¼" rivet holes deducted. Weights of girders include 12 inches of bearing at each end, stiffeners, fillers and rivet heads.

STEEL PLATE GIRDERS.

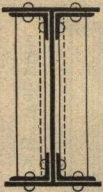
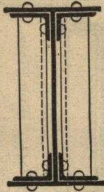
SAFE LOADS IN TONS, UNIFORMLY DISTRIBUTED.

Distance Center to Center of Bearings, in Feet.	 30"×½" Web Plate. 12"×¾" Flange Plates. 5"×3½"×½" Angles.				 33"×½" Web Plate. 12"×¾" Flange Plates. 5"×3½"×½" Angles.			
	Safe Load, including weight of girder.	Weight of girder, in tons.	Increase in safe load for ⅛" increase in thickness of flange plates.	Increase in weight of girder for ⅛" increase in thickness of flange plates.	Safe Load, including weight of girder.	Weight of girder, in tons.	Increase in safe load for ⅛" increase in thickness of flange plates.	Increase in weight of girder for ⅛" increase in thickness of flange plates.
20	81.18	1.62	4.00	.05	91.71	1.70	4.40	.05
21	77.32	1.69	3.80	.05	87.34	1.77	4.20	.05
22	73.80	1.76	3.63	.06	83.37	1.84	4.00	.06
23	70.60	1.86	3.47	.06	79.74	1.95	3.83	.06
24	67.66	1.93	3.32	.06	76.42	2.02	3.67	.06
25	64.95	2.01	3.19	.06	73.36	2.09	3.52	.06
26	62.45	2.07	3.07	.07	70.54	2.17	3.39	.07
27	60.14	2.14	2.96	.07	67.93	2.24	3.26	.07
28	57.99	2.21	2.85	.07	65.50	2.31	3.15	.07
29	55.99	2.31	2.75	.07	63.25	2.42	3.03	.07
30	54.12	2.38	2.66	.08	61.14	2.49	2.94	.08
31	52.38	2.45	2.57	.08	59.16	2.56	2.85	.08
32	50.74	2.52	2.50	.08	57.32	2.64	2.75	.08
33	49.20	2.59	2.42	.08	55.58	2.71	2.67	.08
34	47.76	2.66	2.34	.09	53.94	2.78	2.59	.09
35	46.39	2.73	2.28	.09	52.40	2.85	2.52	.09
36	45.10	2.83	2.22	.09	50.95	2.96	2.45	.09
37	43.88	2.90	2.16	.09	49.57	3.03	2.38	.09
38	42.73	2.97	2.10	.10	48.27	3.11	2.31	.10
39	41.63	3.04	2.05	.10	47.03	3.18	2.25	.10
40	40.59	3.11	2.00	.10	45.85	3.25	2.21	.10

The above values are founded on the moments of inertia of the sections using a maximum fiber strain of 13,000 lbs. per square inch for steel; ⅜" rivet holes in both flanges deducted. Weights of girders correspond to lengths center to center of bearings and include rivet heads, stiffeners and fillers.

STEEL PLATE GIRDERS.

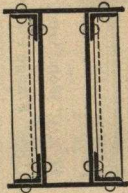
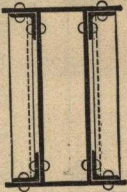
SAFE LOADS IN TONS, UNIFORMLY DISTRIBUTED.

Distance Center to Center of Bearings, in Feet.	 36"× $\frac{1}{2}$ " Web Plate. 12"× $\frac{3}{8}$ " Flange Plates. 5"×3 $\frac{3}{8}$ "× $\frac{1}{2}$ " Angles.				 42"× $\frac{5}{8}$ " Web Plate. 14"× $\frac{3}{8}$ " Flange Plates. 6"×6"× $\frac{3}{8}$ " Angles.			
	Safe Load, including weight of girder.	Weight of girder, in tons.	Increase in safe load for $\frac{1}{16}$ " increase in thickness of flange plates.	Increase in weight of girder for $\frac{1}{16}$ " increase in thickness of flange plates.	Safe Load, including weight of girder.	Weight of girder, in tons.	Increase in safe load for $\frac{1}{16}$ " increase in thickness of flange plates.	Increase in weight of girder for $\frac{1}{16}$ " increase in thickness of flange plates.
20	102.57	1.77	4.80	.05	152.54	2.72	6.71	.06
21	97.67	1.85	4.58	.05	145.28	2.84	6.39	.06
22	93.23	1.92	4.37	.06	138.68	2.95	6.09	.07
23	89.18	2.04	4.18	.06	132.65	3.12	5.83	.07
24	85.46	2.17	4.01	.06	127.12	3.24	5.58	.07
25	82.04	2.19	3.85	.06	122.04	3.36	5.36	.07
26	78.88	2.26	3.70	.07	117.34	3.48	5.16	.08
27	75.96	2.34	3.56	.07	113.00	3.59	4.97	.08
28	73.26	2.41	3.43	.07	108.97	3.71	4.78	.08
29	70.73	2.53	3.31	.07	105.20	3.88	4.63	.09
30	68.37	2.60	3.21	.08	101.70	4.00	4.48	.09
31	66.16	2.68	3.10	.08	98.42	4.12	4.32	.09
32	64.10	2.75	3.00	.08	95.34	4.23	4.20	.10
33	62.16	2.82	2.91	.08	92.45	4.35	4.07	.10
34	60.33	2.89	2.83	.09	89.74	4.47	3.94	.10
35	58.60	2.98	2.75	.09	87.17	4.59	3.83	.10
36	56.98	3.09	2.66	.09	84.74	4.76	3.73	.11
37	55.44	3.16	2.59	.09	82.46	4.87	3.62	.11
38	53.98	3.24	2.52	.10	80.29	4.99	3.53	.11
39	52.59	3.31	2.47	.10	78.23	5.11	3.43	.12
40	51.26	3.39	2.40	.10	76.27	5.23	3.35	.12

The above values are founded on the moments of inertia of the sections using a maximum fiber strain of 13,000 lbs. per square inch for steel; $\frac{1}{8}$ " rivet holes in both flanges deducted. Weights of girders correspond to lengths center to center of bearings and include rivet heads, stiffeners and fillers.

STEEL BOX GIRDERS.

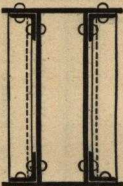
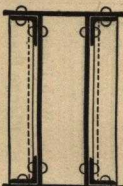
SAFE LOADS IN TONS, UNIFORMLY DISTRIBUTED.

Distance Center to Center of Bearings, in Feet.	 30" X 1/2" Web Plates. 16" X 3/8" Flange Plates. 3 1/2" X 3 1/2" X 1/2" Angles.				 33" X 1/2" Web Plates. 20" X 7/8" Flange Plates. 3 1/2" X 3 1/2" X 1/2" Angles.			
	Safe Load, including weight of girder.	Weight of girder, in tons.	Increase in safe load for 1/8" increase in thickness of flange plates.	Increase in weight of girder for 1/8" increase in thickness of flange plates.	Safe Load, including weight of girder.	Weight of girder, in tons.	Increase in safe load for 1/8" increase in thickness of flange plates.	Increase in weight of girder for 1/8" increase in thickness of flange plates.
20	97.59	2.13	5.73	.07	130.2	2.44	7.95	.09
21	92.94	2.23	5.46	.07	124.0	2.55	7.58	.09
22	88.72	2.32	5.20	.08	118.3	2.66	7.22	.09
23	84.86	2.45	4.98	.08	113.2	2.80	6.90	.10
24	81.32	2.54	4.78	.08	108.5	2.91	6.62	.10
25	78.07	2.64	4.59	.09	104.1	3.03	6.35	.11
26	75.07	2.74	4.41	.09	100.1	3.14	6.12	.11
27	72.29	2.83	4.25	.09	96.4	3.25	5.89	.12
28	69.70	2.93	4.10	.10	93.0	3.36	5.67	.12
29	67.30	3.06	3.96	.10	89.8	3.50	5.48	.12
30	65.06	3.16	3.82	.10	86.8	3.61	5.29	.13
31	62.96	3.25	3.70	.11	84.0	3.72	5.13	.13
32	61.00	3.35	3.58	.11	81.4	3.83	4.97	.14
33	59.14	3.50	3.48	.11	78.9	3.95	4.82	.14
34	57.40	3.54	3.38	.12	76.6	4.06	4.67	.14
35	55.76	3.64	3.28	.12	74.4	4.17	4.53	.15
36	54.22	3.76	3.18	.12	72.3	4.31	4.41	.15
37	52.75	3.86	3.09	.13	70.4	4.41	4.30	.16
38	51.36	3.95	3.02	.13	68.5	4.53	4.18	.16
39	50.04	4.05	2.94	.13	66.7	4.65	4.07	.17
40	48.80	4.15	2.86	.14	65.1	4.76	3.97	.17

The above values are founded on the moments of inertia of the sections using a maximum fiber strain of 18,000 lbs. per square inch for steel; 1/8" rivet holes in both flanges deducted. Weights of girders correspond to lengths center to center of bearings and include rivet heads, stiffeners and fillers.

STEEL BOX GIRDERS.

SAFE LOADS IN TONS, UNIFORMLY DISTRIBUTED

Distance Center to Center of Bearings, in Feet.	 36" X 1/2" Web Plates.				 42" X 1/2" Web Plates.			
	Safe Load, including weight of girder.	Weight of girder, in tons.	Increase in safe load for 1/8" increase in thickness of flange plates.	Increase in weight of girder for 1/8" increase in thickness of flange plates.	Safe Load, including weight of girder.	Weight of girder, in tons.	Increase in safe load for 1/8" increase in thickness of flange plates.	Increase in weight of girder for 1/8" increase in thickness of flange plates.
20	184.9	3.92	10.59	.10	278.5	3.78	15.80	.13
21	176.2	3.06	10.10	.11	274.8	3.95	15.05	.13
22	168.2	3.19	9.64	.11	262.3	4.13	14.37	.14
23	160.8	3.36	9.22	.12	251.0	4.34	13.74	.15
24	154.2	3.49	8.84	.12	240.5	4.52	13.17	.15
25	148.0	3.63	8.48	.13	230.9	4.69	12.64	.16
26	142.4	3.76	8.18	.13	222.0	4.87	12.16	.17
27	137.0	3.89	7.85	.14	213.8	5.04	11.70	.17
28	132.1	4.03	7.57	.14	206.2	5.21	11.29	.18
29	127.6	4.15	7.31	.15	199.0	5.43	10.91	.19
30	123.3	4.33	7.06	.15	192.4	5.61	10.54	.19
31	119.3	4.45	6.83	.16	186.2	5.78	10.21	.20
32	115.6	4.60	6.63	.16	180.3	5.95	9.88	.20
33	112.1	4.74	6.43	.17	174.9	6.12	9.58	.21
34	108.8	4.87	6.24	.17	169.8	6.29	9.30	.22
35	105.7	5.00	6.06	.18	164.9	6.47	9.03	.22
36	102.8	5.17	5.90	.18	160.3	6.69	8.78	.23
37	100.0	5.31	5.74	.19	156.0	6.86	8.54	.24
38	97.4	5.44	5.58	.19	151.9	6.94	8.32	.24
39	94.9	5.58	5.44	.20	148.0	7.20	8.11	.25
40	92.5	5.71	5.30	.20	144.3	7.38	7.91	.26

The above values are founded on the moments of inertia of the sections using a maximum fiber strain of 13,000 lbs. per square inch for steel; 1/8" rivet holes in both flanges deducted. Weights of girders correspond to lengths center to center of bearings and include rivet heads, stiffeners and fillers.

GENERAL FORMULÆ ON THE FLEXURE OF BEAMS OF ANY CROSS-SECTION.

Let A = area of section in square inches,

l = length of span in inches,

W = load uniformly distributed in lbs.,

M = bending moment in inch pounds,

h = height of cross-section, out to out, in inches,

n = distance of center of gravity of section, from top or from bottom, in inches,

f = stress per square inch in extreme fibers of beam, either top or bottom, in lbs., according as n relates to distance from top or from bottom of section,

D = maximum deflection in inches,

I = moment of inertia of section neutral axis through center of gravity,

I'' = moment of inertia of section neutral axis parallel to above, but not through center of gravity,

d = distance between these neutral axes,

S = section modulus.

r = radius of gyration in inches,

E = modulus of elasticity for steel 29,000,000.

$$\text{Then: } S = \frac{I}{n}, \quad r = \sqrt{\frac{I}{A}},$$

$$M = \frac{f I}{n} = f S,$$

$$f = \frac{M n}{I} = \frac{M}{S},$$

$$W = \frac{8 f I}{l n} = \frac{8 f}{l} S,$$

$$f = \frac{W l n}{8 I} = \frac{W l}{8 S}$$

$$I'' = I + A d^2,$$

$$D = \frac{5 W l^3}{384 E I} \text{ for beam supported at both ends and uniformly loaded,}$$

$$D = \frac{P l^3}{48 E I} \text{ for beam supported at both ends and loaded with a single load } P \text{ at middle,}$$

$$D = \frac{W l^3}{8 E I} \text{ for beam fixed at one end and unsupported at the other and uniformly loaded,}$$

$$D = \frac{P l^3}{8 E I} \text{ for beam fixed at one end and unsupported at other and loaded with a single load } P \text{ at the latter end.}$$

BENDING MOMENTS AND DEFLECTIONS OF BEAMS UNDER VARIOUS SYSTEMS OF LOADING.

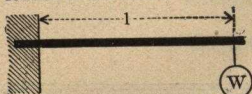
W = total load.

l = length of beam.

I = moment of inertia.

E = modulus of elasticity.

- (1) Beam fixed at one end and loaded at the other.



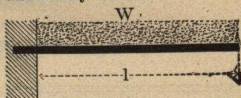
Safe load = $\frac{1}{8}$ that given in tables.

Maximum bending moment at point of support = Wl .

Maximum shear at point of support = W .

Deflection = $\frac{Wl^3}{3EI}$

- (2) Beam fixed at one end, and uniformly loaded.



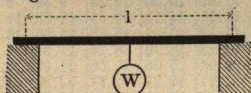
Safe load = $\frac{1}{4}$ that given in tables.

Maximum bending moment at point of support = $\frac{Wl}{2}$

Maximum shear at point of support = W .

Deflection = $\frac{Wl^3}{8EI}$

- (3) Beam supported at both ends, single load in the middle.



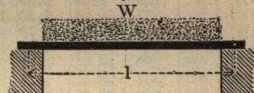
Safe load = $\frac{1}{2}$ that given in tables.

Maximum bending moment at middle of beam = $\frac{Wl}{4}$

Maximum shear at points of support = $\frac{1}{2}W$.

Deflection = $\frac{Wl^3}{48EI}$

- (4) Beam supported at both ends and uniformly loaded.



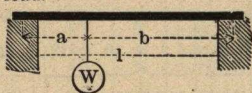
Safe load = that given in tables.

Maximum bending moment at middle of beam = $\frac{Wl}{8}$

Maximum shear at points of support = $\frac{1}{2}W$.

Deflection = $\frac{Wl^3}{76.8EI}$

- (5) Beams supported at both ends, single unsymmetrical load.



Safe load = that given in tables

$\times \frac{l^2}{8ab}$

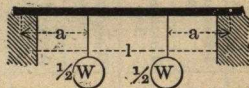
Max. bending moment under load = $\frac{Wab}{l}$

Maximum shear: at support near $a = \frac{Wb}{l}$; at other support = $\frac{Wa}{l}$

Maximum deflection

= $\frac{Wab(2l-a)}{9EI} \sqrt{\frac{1}{3}a(2l-a)}$

- (6) Beam supported at both ends, two symmetrical loads.



Safe load = that given in tables

$\times \frac{l}{4a}$

Maximum bending moment between loads = $\frac{1}{2}Wa$.

Maximum shear between load and nearer support = $\frac{1}{2}W$.

Max. Deflect. = $\frac{Wa}{48EI} (3l^2 - 4a^2)$.

SAFE LOADS IN TONS FOR GAS OR STEAM-PIPE
COLUMNS.

STANDARD PIPE.

Nominal size, inches.	External dia., in.	Thickness, in.	Weight per ft., lbs.	Area of section.	r.	LENGTH IN FEET.				
						8	9	10	12	14
2½	2.875	.204	5.74	1.59	.94	5.90	5.51	5.21		
3	3.5	.217	7.54	2.26	1.16	9.14	8.75	8.35	7.52	
3½	4.0	.228	9.00	2.59	1.35	11.02	10.66	10.25	9.39	8.62
4	4.5	.237	10.66	3.33	1.50	14.45	14.11	13.65	12.72	11.78
4½	5.0	.247	12.34	3.73	1.68	16.78	16.33	15.88	14.90	13.98
5	5.563	.259	14.50	4.17	1.88	18.76	18.76	18.26	17.31	16.26
6	6.625	.280	18.76	5.57	2.25	25.06	25.06	25.06	24.39	23.32
7	7.625	.301	23.37	7.18	2.59	32.31	32.31	32.31	32.31	31.32
8	8.625	.322	28.18	8.14	2.94	36.63	36.63	36.63	36.63	36.63

XX STRONG.

Nominal size, in.	External dia., in.	Thickness, in.	Weight per ft., lbs.	Area of section.	r.	LENGTH IN FEET.				
						8	9	10	12	14
2½	2.875	.56	13.68	4.09	0.82	14.10	13.04	11.86		
3	3.5	.608	18.56	5.52	1.02	21.25	20.12	19.04	16.56	
3½	4.0	.642	22.75	6.63	1.20	27.18	26.02	24.86	22.54	19.89
4	4.50	.682	27.48	8.33	1.35	35.31	34.15	32.84	30.19	27.57
5	5.563	.75	38.12	11.73	1.70	52.78	51.37	49.94	47.06	44.16
6	6.625	.875	53.11	15.80	2.04	71.10	71.10	70.58	66.99	64.22

Z BARS.

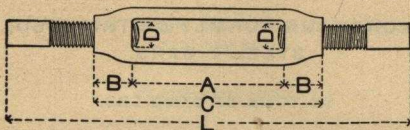
SAFE LOADS, UNIFORMLY DISTRIBUTED, FOR
STEEL Z BARS.

IN TONS OF 2,000 LBS.

Section number.	Size, inches.	Thickness of metal.	DISTANCE BETWEEN SUPPORTS IN FEET.									
			4	5	6	7	8	9	10	12	14	16
Z1	6	$\frac{3}{8}$	8.44	6.75	5.68	4.82	4.22	3.75	3.38	2.81	2.41	2.11
	$6\frac{1}{8}$	$\frac{7}{8}$	9.83	7.86	6.55	5.61	4.91	4.37	3.93	3.28	2.81	2.46
	$6\frac{1}{2}$	$\frac{1}{2}$	11.22	8.98	7.48	6.41	5.61	4.99	4.49	3.74	3.21	2.81
Z5	$5\frac{1}{8}$	$\frac{9}{16}$	11.22	8.98	7.48	6.41	5.61	4.99	4.49	3.74	3.21	2.81
	6	$\frac{5}{8}$	12.42	9.95	8.29	7.11	6.22	5.53	4.98	4.15	3.55	3.11
	$6\frac{1}{8}$	$\frac{1}{2}$	13.68	10.95	9.12	7.82	6.34	6.08	5.47	4.56	3.91	3.42
	$6\frac{1}{2}$	$\frac{3}{4}$	14.92	11.94	9.95	8.53	7.46	6.68	5.97	4.97	4.26	3.73
Z2	5	$\frac{5}{8}$	5.34	4.27	3.56	3.05	2.67	2.37	2.13	1.78	1.52	1.33
	$5\frac{1}{8}$	$\frac{3}{8}$	6.39	5.11	4.26	3.65	3.19	2.84	2.55	2.13	1.82	1.60
	$5\frac{1}{2}$	$\frac{1}{2}$	7.44	5.95	4.96	4.25	3.72	3.31	2.97	2.48	2.12	1.86
Z6	$4\frac{1}{8}$	$\frac{1}{2}$	7.41	5.93	4.94	4.24	3.71	3.29	2.96	2.47	2.12	1.85
	5	$\frac{7}{8}$	8.33	6.66	5.55	4.76	4.16	3.70	3.33	2.78	2.38	2.08
	$5\frac{1}{8}$	$\frac{3}{8}$	9.25	7.40	6.17	5.29	4.62	4.11	3.70	3.08	2.64	2.31
	$5\frac{1}{2}$	$\frac{1}{2}$	10.17	8.14	6.78	5.81	5.08	4.52	4.07	3.39	2.91	2.54
Z3	4	$\frac{3}{4}$	3.14	2.51	2.09	1.79	1.57	1.39	1.26	1.05	0.90	0.78
	$4\frac{1}{8}$	$\frac{1}{2}$	3.91	3.13	2.61	2.24	1.96	1.74	1.56	1.30	1.12	0.98
	$4\frac{1}{2}$	$\frac{3}{8}$	4.68	3.74	3.12	2.67	2.34	2.08	1.87	1.56	1.34	1.17
Z7	$3\frac{1}{8}$	$\frac{7}{8}$	4.64	3.71	3.09	2.65	2.32	2.06	1.86	1.55	1.33	1.16
	4	$\frac{1}{2}$	5.28	4.23	3.52	3.02	2.64	2.35	2.11	1.76	1.51	1.32
	$4\frac{1}{8}$	$\frac{3}{8}$	5.93	4.75	3.95	3.39	2.97	2.64	2.37	1.98	1.70	1.48
	$4\frac{1}{2}$	$\frac{5}{8}$	6.58	5.26	4.38	3.76	3.29	2.92	2.63	2.19	1.88	1.65
Z4	3	$\frac{1}{4}$	1.93	1.54	1.28	1.10	0.96	0.86	0.77	0.64	0.55	0.48
	$3\frac{1}{8}$	$\frac{1}{8}$	2.38	1.90	1.58	1.36	1.19	1.06	0.95	0.79	0.68	0.59
	$3\frac{1}{2}$	$\frac{3}{8}$	2.84	2.27	1.89	1.62	1.42	1.26	1.14	0.95	0.81	0.71
Z8	$2\frac{1}{8}$	$\frac{7}{8}$	2.68	2.15	1.79	1.53	1.34	1.19	1.07	0.89	0.77	0.67
	3	$\frac{1}{2}$	3.06	2.45	2.04	1.75	1.53	1.36	1.22	1.02	0.88	0.77
	$3\frac{1}{8}$	$\frac{1}{8}$	3.43	2.74	2.28	1.96	1.71	1.52	1.37	1.14	0.98	0.86
	$3\frac{1}{2}$	$\frac{5}{8}$	3.81	3.05	2.54	2.18	1.90	1.69	1.52	1.27	1.09	0.95

Safe loads include weight of Z Bar. Maximum fiber strain, 12,000 lbs. per square inch.

TURNBUCKLES.



- D. Size=Diameter of Screw.
 A. Length in Clear between Heads.
 B. Length of Tapped Heads= $1\frac{1}{2}$ D.
 C. Total Length of Buckle.
 L. Total Length of Buckle and Stub Ends, when open.

Size D	A	C	L	Price	Size D	A	C	L	Price
$\frac{3}{8}$	6	$7\frac{1}{8}$	22	\$.40	$1\frac{3}{4}$	6	$11\frac{1}{4}$	28	\$2.00
$\frac{7}{16}$	6	$7\frac{5}{16}$	22	.42	$1\frac{1}{2}$	6	$11\frac{3}{8}$	29	2.25
$\frac{1}{2}$	6	$7\frac{1}{2}$	22	.45	2	6	12	29	2.65
$\frac{9}{16}$	6	$7\frac{11}{16}$	22	.48	$2\frac{1}{8}$	6	$12\frac{3}{8}$	29	3.10
$\frac{5}{8}$	6	$7\frac{7}{8}$	22	.50	$2\frac{1}{4}$	6	$12\frac{3}{4}$	30	3.50
$\frac{3}{4}$	6	$8\frac{1}{4}$	23	.63	$2\frac{3}{8}$	6	$13\frac{1}{8}$	31	4.00
$\frac{7}{8}$	6	$8\frac{5}{8}$	24	.75	$2\frac{1}{2}$	6	$13\frac{1}{2}$	32	4.50
1	6	9	25	.88	$2\frac{5}{8}$	6	$13\frac{7}{8}$	32	5.00
$1\frac{1}{8}$	6	$9\frac{3}{8}$	25	1.00	$2\frac{3}{4}$	6	$14\frac{1}{4}$	33	5.50
$1\frac{1}{4}$	6	$9\frac{3}{4}$	26	1.25	$2\frac{7}{8}$	6	$14\frac{5}{8}$	33	6.00
$1\frac{3}{8}$	6	$10\frac{1}{4}$	27	1.38	3	6	15	34	6.50
$1\frac{1}{2}$	6	$10\frac{1}{2}$	27	1.50	$3\frac{1}{4}$	6	$15\frac{3}{4}$	36	8.00
$1\frac{5}{8}$	6	$10\frac{7}{8}$	28	1.75	$3\frac{1}{2}$	6	$16\frac{1}{2}$	37	10.00

Lengths given above are Standard for Bridge, Roof and ordinary Truss Buckles.

They have a guaranteed strength of 60,000 pounds per square inch of section of bolt at bottom of thread. Such bolt ends are made of good bridge iron having tensile strength of 50,000 pounds per square inch.

Open Buckles of this form can be adjusted with a bar, hook, or wrench, and have the great advantage of showing the ends of the bolts, so that inspectors can see that they have a good hold of thread, and do not bite together.

UPSET SCREW ENDS, FOR ROUND AND SQUARE BARS.

Diameter of Round or Side of Square Bar, Inches.	ROUND BARS.				SQUARE BARS.			
	Diameter of Upset Screw End, Inches.	Diameter of Screw at Root of Thread, Inches.	Threads per Inch. No.	Excess of Effective Area of Screw End over Bar. Per cent.	Diameter of Upset Screw End, Inches.	Diameter of Screw at Root of Thread, Inches.	Threads per Inch. No.	Excess of Effective Area of Screw End over Bar. Per cent.
$\frac{1}{2}$	$\frac{3}{4}$	.620	10	54	$\frac{3}{4}$	.620	10	21
$\frac{9}{16}$	$\frac{3}{4}$	.620	10	21	$\frac{7}{8}$	.731	9	33
$\frac{5}{8}$	$\frac{7}{8}$	.731	9	37	1	.837	8	41
$\frac{11}{16}$	1	.837	8	48	1	.837	8	17
$\frac{3}{4}$	1	.837	8	25	$1\frac{1}{8}$	.940	7	23
$\frac{13}{16}$	$1\frac{1}{8}$	.940	7	34	$1\frac{1}{4}$	1.065	7	35
$\frac{7}{8}$	$1\frac{1}{4}$	1.065	7	48	$1\frac{3}{8}$	1.160	6	38
$1\frac{1}{8}$	$1\frac{1}{4}$	1.065	7	29	$1\frac{3}{8}$	1.160	6	20
1	$1\frac{3}{8}$	1.160	6	35	$1\frac{1}{2}$	1.284	6	29
$1\frac{1}{16}$	$1\frac{3}{8}$	1.160	6	19	$1\frac{5}{8}$	1.389	$5\frac{1}{2}$	34
$1\frac{1}{8}$	$1\frac{1}{2}$	1.284	6	30	$1\frac{5}{8}$	1.389	$5\frac{1}{2}$	20
$1\frac{3}{8}$	$1\frac{1}{2}$	1.284	6	17	$1\frac{3}{4}$	1.490	5	24
$1\frac{1}{4}$	$1\frac{5}{8}$	1.389	$5\frac{1}{2}$	23	$1\frac{7}{8}$	1.615	5	31
$1\frac{5}{16}$	$1\frac{3}{4}$	1.490	5	29	$1\frac{7}{8}$	1.615	5	19
$1\frac{3}{8}$	$1\frac{3}{4}$	1.490	5	18	2	1.712	$4\frac{1}{2}$	22
$1\frac{6}{16}$	$1\frac{7}{8}$	1.615	5	26	$2\frac{1}{8}$	1.837	$4\frac{1}{2}$	28
$1\frac{1}{2}$	2	1.712	$4\frac{1}{2}$	30	$2\frac{1}{8}$	1.837	$4\frac{1}{2}$	18
$1\frac{9}{16}$	2	1.712	$4\frac{1}{2}$	20	$2\frac{1}{4}$	1.962	$4\frac{1}{2}$	24
$1\frac{5}{8}$	$2\frac{1}{8}$	1.837	$4\frac{1}{2}$	28	$2\frac{3}{8}$	2.087	$4\frac{1}{2}$	30
$1\frac{11}{16}$	$2\frac{1}{8}$	1.837	$4\frac{1}{2}$	18	$2\frac{3}{8}$	2.087	$4\frac{1}{2}$	20
$1\frac{3}{4}$	$2\frac{1}{4}$	1.962	$4\frac{1}{2}$	26	$2\frac{1}{2}$	2.175	4	21
$1\frac{7}{8}$	$2\frac{1}{4}$	1.962	$4\frac{1}{2}$	17	$2\frac{5}{8}$	2.300	4	26
$1\frac{9}{8}$	$2\frac{3}{8}$	2.087	$4\frac{1}{2}$	24	$2\frac{5}{8}$	2.300	4	18
$1\frac{15}{16}$	$2\frac{1}{2}$	2.175	4	26	$2\frac{3}{4}$	2.425	4	23
2	$2\frac{1}{2}$	2.175	4	18	$2\frac{7}{8}$	2.550	4	28
$2\frac{1}{16}$	$2\frac{5}{8}$	2.300	4	24	$2\frac{7}{8}$	2.550	4	20
$2\frac{1}{8}$	$2\frac{5}{8}$	2.300	4	17	3	2.629	$3\frac{1}{2}$	20
$2\frac{3}{16}$	$2\frac{3}{4}$	2.425	4	23	$3\frac{1}{8}$	2.754	$3\frac{1}{2}$	24

SHEET IRON AND STEEL.

WEIGHT OF SUPERFICIAL FOOT, BIRMINGHAM GAUGE.

GAUGE.	WEIGHT IN LBS.		GAUGE.	WEIGHT IN LBS.	
	Iron.	Steel.		Iron.	Steel.
No. 1=.3	12.12	12.36	No. 16=.065	2.63	2.68
" 2=.284	11.48	11.71	" 17=.058	2.34	2.39
" 3=.259	10.47	10.68	" 18=.049	1.98	2.02
" 4=.238	9.62	9.81	" 19=.042	1.70	1.73
" 5=.22	8.89	9.07	" 20=.035	1.56	1.59
" 6=.203	8.20	8.36	" 21=.032	1.40	1.43
" 7=.18	7.27	7.42	" 22=.028	1.25	1.28
" 8=.165	6.67	6.80	" 23=.025	1.12	1.14
" 9=.148	5.98	6.10	" 24=.022	1.	1.02
" 10=.134	5.42	5.53	" 25=.02	.9	.92
" 11=.12	4.85	4.95	" 26=.018	.8	.82
" 12=.109	4.41	4.50	" 27=.016	.72	.73
" 13=.095	3.84	3.92	" 28=.014	.64	.65
" 14=.083	3.35	3.42	" 29=.013	.56	.57
" 15=.072	2.91	2.97	" 30=.012	.5	.51

TANK IRON AND STEEL.

WEIGHT OF SUPERFICIAL FOOT.

THICKNESS IN INCHES.	WEIGHT IN LBS.		THICKNESS IN INCHES.	WEIGHT IN LBS.	
	Iron.	Steel.		Iron.	Steel.
$\frac{1}{32}$ =.03125	1.27	1.30	$\frac{5}{16}$ =.3125	12.63	12.88
$\frac{1}{16}$ =.0625	2.52	2.57	$\frac{3}{8}$ =.375	15.16	15.46
$\frac{3}{32}$ =.09375	3.79	3.87	$\frac{7}{16}$ =.4375	17.68	18.03
$\frac{1}{8}$ =.125	5.05	5.15	$\frac{1}{2}$ =.5	20.21	20.61
$\frac{5}{32}$ =.15625	6.32	6.45	$\frac{9}{16}$ =.5625	22.73	23.19
$\frac{3}{16}$ =.1875	7.58	7.73	$\frac{5}{8}$ =.625	25.26	25.77
$\frac{7}{32}$ =.21875	8.84	9.02	$\frac{3}{4}$ =.75	30.31	30.92
$\frac{1}{4}$ =.25	10.10	10.30	$\frac{7}{8}$ =.875	35.37	36.08
$\frac{9}{32}$ =.28125	11.38	11.61	1=1.	40.42	41.23

The low temperature (as compared with Iron) at which Steel Plates have to be finished, causes a slight springing of the rolls, leaving the plate thicker in the center. This, combined with greater density, causes Steel Plates, if kept up to full thickness on the edges, to weigh more than Iron. Both Iron and Steel over 72 inches wide are liable to run even heavier than the weights given above.

BUILT COLUMN SECTIONS.

Light lines indicate lattice.

Fig. 1



Fig. 2

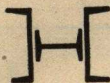


Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9



Fig. 10



Fig. 11



Fig. 12



Fig. 13



Fig. 14

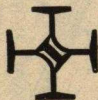


Fig. 15

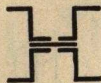
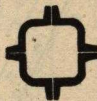
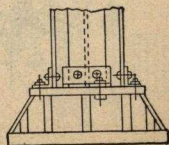
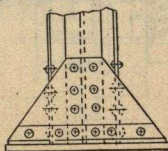
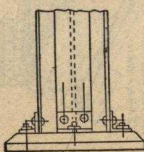


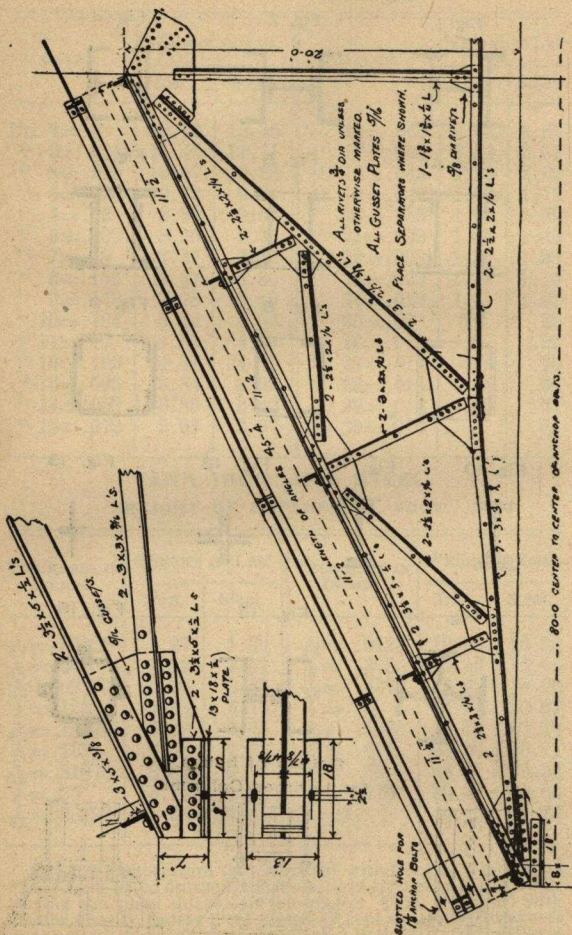
Fig. 16



Details of bases
for Larimer Columns



DETAILS OF STEEL TRUSSES.



DETAIL SHOWING FRAMING OF STEEL BEAMS

FOR FLOORS IN FIREPROOF BUILDINGS.

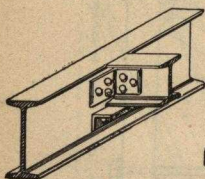


FIG 1

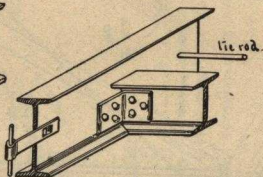


FIG 2

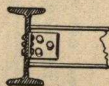


FIG 3

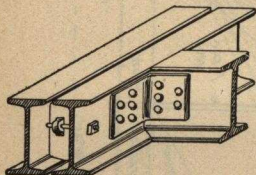


FIG 5



FIG 4



FIG 6

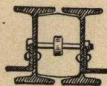


FIG 7

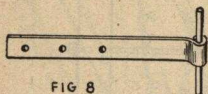


FIG 8

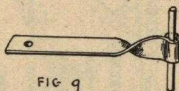


FIG 9

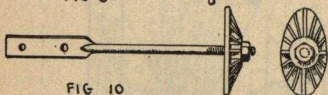
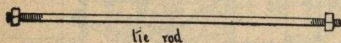


FIG 10



FIG 11.



tie rod



beam anchors.

Details of Floor Connections & Anchors.

PART SECOND

PAGES 106 TO 272 INCLUSIVE IS
DEVOTED TO TABLES AND DE-
SIGNS OF CAST IRON COLUMNS,
LINTELS, STORE FRONTS AND
MISCELLANEOUS ARCHITEC-
TURAL WORK ::::::::::::::

STRENGTH OF CAST IRON COLUMNS.

The following table of Coefficients for determining the safe load of Cast Iron Columns of any cross section, is based on a **Factor of Safety 8.**

We have adopted this factor of safety as it is now more generally used in important work.

Let l = length of column in inches.

Let d = least diameter in inches.

Let C = coefficient.

Let W = safe load.

$$W = \frac{10000}{1 + \frac{1}{400} \left(\frac{l}{d} \right)^2} \times \text{area.}$$

$$\frac{10000}{1 + \frac{1}{400} \left(\frac{l}{d} \right)^2} = C$$

Various sections for which the following table can be used:—

Fig. 1

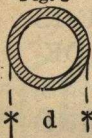


Fig. 2

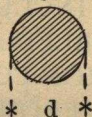


Fig. 3

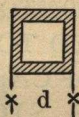


Fig. 4

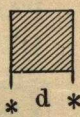


Fig. 5

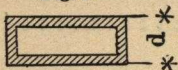


Fig. 6

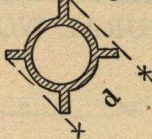


Fig. 7

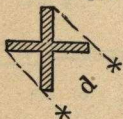


Fig. 8

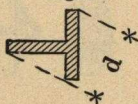
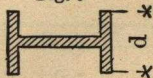


Fig. 9



RULE:—Divide the length of the column in inches by the least diameter d in inches, as shown in the above cuts; the number in column headed C of the table on opposite page, corresponding to the quotient $\frac{l}{d}$ so found multiplied by the area of cross section of the column in square inches, will give the safe load in tons of 2,000 lbs.

TABLE OF COEFFICIENTS FOR CAST IRON COLUMNS.

FACTOR OF SAFETY 8.

$\frac{1}{d}$	Coefficient	$\frac{1}{d}$	Coefficient	$\frac{1}{d}$	Coefficient	$\frac{1}{d}$	Coefficient	$\frac{1}{d}$	Coefficient	$\frac{1}{d}$	Coefficient
	Tons		Tons		Tons		Tons		Tons		Tons
1	4.98	13	3.51	25	1.95	37	1.13	49	0.71	61	0.48
2	4.95	14	3.35	26	1.85	38	1.08	50	0.68	62	0.47
3	4.89	15	3.20	27	1.77	39	1.04	51	0.66	63	0.45
4	4.80	16	3.04	28	1.68	40	1.00	52	0.64	64	0.44
5	4.70	17	2.90	29	1.61	41	0.96	53	0.62	65	0.43
6	4.58	18	2.76	30	1.53	42	0.92	54	0.60	66	0.42
7	4.45	19	2.62	31	1.46	43	0.88	55	0.58	67	0.41
8	4.31	20	2.50	32	1.40	44	0.85	56	0.56	68	0.39
9	4.15	21	2.37	33	1.34	45	0.82	57	0.54	69	0.38
10	4.00	22	2.26	34	1.28	46	0.79	58	0.53	70	0.37
11	3.83	23	2.15	35	1.23	47	0.76	59	0.51	71	0.36
12	3.67	24	2.04	36	1.17	48	0.73	60	0.50	72	0.35

EXAMPLE OF TABLE :—What is the safe load of a hollow rectangular Cast Iron Column (fig. 5) 6" face, 12" deep, 1" metal 10'-0" long ?

$$\frac{1}{d} = \frac{10 \times 12}{6} = \frac{120}{6} = 20$$

In column $\frac{1}{d}$ and opposite 20, find 2.5 Tons—

Area = 32 inches, which multiplied by 2.5 Tons =

W = 32 × 2.5 = 80 Tons safe load (factor of safety 8).

For the convenience of Architects, we have given a number of tables of Round, Square and Rectangular Columns, shown in the following pages, as a quicker method of determining the sizes of columns they desire to use, and have adopted the Formulas and Coefficients for the strength of Square and Rectangular Columns given by F. Schumann, C. E.

SAFE LOAD OF HOLLOW CYLINDRICAL CAST IRON COLUMNS.

ONE-EIGHTH THE BREAKING WEIGHT.

The following tables give the **Safe Load in Tons of 2,000 lbs.** for Columns having Capitals and Bases accurately turned to a true plane, having a perfectly fair bearing, and set with a degree of care usual in ordinary building. **For diameters or lengths intermediate of those in the tables, the loads may be found near enough by simple proportion.**

For Thicknesses less than those in the table, the loads may safely be assumed to diminish in the same proportion as the thickness, while the outer diameter remains the same. But for greater thicknesses than those in the table, the loads do not increase as rapidly as the new thickness. Still in practice they may be assumed to do so approximately, if the new thickness does not exceed about 1-8 part of the outer diameter.

SAFE LOAD IN TONS FOR CAST IRON COLUMNS WITH TURNED CAPITALS AND BASES.

Height in feet.	External Diam. 3 inches.				External Diam. 4 inches.				External Diam. 5 inches.				External Diam. 6 inches.			
	Thickness of Metal.				Thickness of Metal.				Thickness of Metal.				Thickness of Metal.			
	1/2"	3/4"	1"	1 1/4"	1/2"	3/4"	1"	1 1/4"	1/2"	3/4"	1"	1 1/4"	1/2"	3/4"	1"	1 1/4"
7	8.0	9.9	10.7	...	15.5	20.5	23.9	26.0	24.6	33.6	40.6	45.8	48.3	59.8	68.9	76.3
8	6.8	8.1	8.7	...	13.5	17.7	20.6	22.3	21.9	29.7	35.8	40.2	43.5	53.5	61.6	68.0
9	5.5	6.6	7.1	...	11.8	15.5	17.9	19.3	19.5	26.4	31.6	35.5	39.2	48.1	55.3	60.8
10	4.6	5.5	6.0	...	10.8	13.7	15.5	16.4	17.5	23.5	28.1	31.5	35.5	43.5	49.7	54.6
11	4.0	4.7	5.0	...	9.2	11.6	13.1	14.0	15.7	21.1	25.1	28.0	32.2	39.3	44.9	49.1
12	3.3	4.1	4.3	...	7.9	10.1	11.2	12.0	14.1	19.0	22.6	25.1	29.3	35.7	40.7	44.5
13	3.0	3.5	3.8	...	6.9	8.8	9.9	10.5	13.1	17.2	20.1	22.0	26.8	32.5	37.0	40.3
14	2.6	3.1	3.3	...	6.1	7.7	8.7	9.3	11.5	15.1	17.5	19.3	24.5	29.7	33.8	36.8
15	2.3	2.8	3.0	...	5.4	6.9	7.8	8.2	10.3	13.5	15.7	17.2	23.0	27.4	30.6	32.8
16	2.1	2.5	2.6	...	4.8	6.1	7.0	7.3	9.2	12.1	14.1	15.4	20.6	24.6	27.5	29.5
17	1.8	2.2	2.4	...	4.3	5.5	6.3	6.6	8.3	10.9	12.7	13.9	18.6	22.1	24.8	26.5
18	1.7	2.0	2.1	...	4.0	5.0	5.6	6.0	7.5	9.9	11.4	12.6	16.8	20.1	22.5	24.1
19	1.5	1.8	2.0	...	3.6	4.6	5.1	5.5	6.8	9.0	10.5	11.5	15.3	18.3	20.5	22.0
20	1.4	1.6	1.8	...	3.3	4.2	4.7	5.0	6.3	8.3	9.6	10.5	14.1	16.8	18.8	20.1
21	1.3	1.5	1.6	...	3.0	3.8	4.3	4.6	5.8	7.6	8.8	9.6	13.0	15.5	17.3	18.5
22	1.1	1.4	1.5	...	2.8	3.6	4.0	4.3	5.3	7.0	8.1	9.0	12.0	14.3	16.0	17.1
23	1.1	1.3	1.4	...	2.6	3.3	3.7	4.0	5.0	6.5	7.6	8.3	11.1	13.2	14.8	15.8
24	1.0	1.2	1.3	...	2.4	3.1	3.5	3.6	4.6	6.0	7.0	7.7	10.3	12.3	13.8	14.8
25	1.0	1.1	1.2	...	2.3	2.8	3.2	3.4	4.3	5.6	6.6	7.1	9.6	11.5	12.8	13.8

SAFE LOAD IN TONS FOR CAST IRON COLUMNS WITH TURNED CAPITALS AND BASES.

Height in feet.	External Diameter, 7 inches.					External Diameter, 8 inches.					External Diameter, 9 inches.					External Diameter, 10 inches.					External Diameter, 11 inches.				
	Thickness of Metal.					Thickness of Metal.					Thickness of Metal.					Thickness of Metal.					Thickness of Metal.				
	¾"	1"	1¼"	1½"		¾"	1"	1¼"	1½"		¾"	1"	1¼"	1½"		¾"	1"	1¼"	1½"		1"	1¼"	1½"	2"	
7	64.0	80.4	94.1	105.8		80.1	101.6	120.6	137.1		96.7	123.5	147.8	169.6		113.5	145.8	175.5	202.6		168.3	203.6	236.0	293.4	
8	58.5	73.1	85.5	95.9		74.1	93.8	111.0	126.0		90.4	115.3	137.6	157.5		106.9	137.1	164.8	189.9		159.4	192.5	223.0	276.3	
9	53.5	66.6	77.8	87.0		68.6	86.5	102.2	115.7		84.3	107.3	127.9	146.1		100.5	128.8	154.5	177.8		150.7	181.7	210.1	259.7	
10	49.0	60.9	70.9	79.1		63.4	79.8	94.1	106.3		78.7	100.0	118.9	135.6		94.5	120.8	144.7	166.2		142.3	171.3	197.9	243.9	
11	44.8	55.7	64.7	72.0		58.7	73.7	86.8	97.9		73.4	93.1	110.6	125.8		88.8	113.3	135.5	155.4		134.3	161.5	186.3	228.9	
12	41.2	51.0	59.2	65.8		54.3	68.2	80.1	90.1		68.5	86.7	102.8	116.8		83.3	106.3	126.9	145.3		126.6	152.1	175.3	214.9	
13	37.9	46.9	54.3	60.3		50.4	63.1	74.0	83.2		64.0	80.8	95.7	108.6		78.3	99.1	118.9	136.0		119.5	143.3	165.0	201.7	
14	35.0	43.2	50.0	55.3		46.8	58.6	68.6	77.0		59.8	75.5	89.2	101.1		73.6	93.6	111.5	127.3		112.8	135.1	155.3	189.5	
15	32.3	39.9	46.1	51.0		43.6	54.4	63.6	71.3		55.9	70.5	83.3	94.3		69.2	87.9	104.6	119.4		106.4	127.4	146.3	178.1	
16	30.0	37.0	42.6	47.1		40.6	50.6	59.1	66.3		52.4	66.0	77.8	88.0		65.1	82.7	98.3	112.0		100.5	120.2	137.9	167.6	
17	27.8	34.3	39.5	43.6		37.9	47.3	55.1	61.6		49.1	61.8	72.9	82.3		61.4	77.8	92.5	105.3		95.0	113.5	130.1	157.9	
18	26.2	31.8	36.1	39.3		36.5	44.1	51.5	57.5		46.1	58.0	68.3	77.1		57.9	73.3	87.0	99.0		89.9	107.3	122.9	148.9	
19	23.9	29.0	32.9	35.8		33.2	41.3	48.1	53.8		43.5	54.6	64.1	72.4		54.6	69.2	82.0	93.3		85.1	101.5	116.1	140.6	
20	21.9	26.5	30.1	32.8		31.9	39.1	45.0	49.6		40.9	51.4	60.4	68.0		51.6	65.3	77.5	88.0		80.6	96.1	110.0	132.8	
21	20.1	24.4	27.8	30.2		29.3	36.0	41.5	45.7		38.6	47.1	56.8	64.1		48.9	61.8	73.2	83.1		76.5	91.1	104.1	125.7	
22	18.6	22.6	25.6	27.9		27.1	33.3	38.3	42.2		36.5	45.7	53.6	60.4		46.3	58.5	69.3	78.6		72.6	86.5	98.8	119.1	
23	17.3	20.9	23.8	25.9		25.1	30.8	35.5	39.1		34.9	43.3	50.2	55.3		44.0	55.5	65.6	74.4		69.0	82.1	93.8	112.9	
24	16.0	19.5	22.1	24.1		23.4	28.7	33.0	36.4		32.5	40.2	46.7	52.0		41.8	52.6	62.3	70.5		66.7	78.1	89.1	107.2	
25	15.0	18.1	20.6	22.5		21.8	26.8	30.8	34.0		30.3	37.5	43.6	48.5		40.5	50.6	58.8	66.4		62.6	74.4	84.8	101.9	

SAFE LOAD IN TONS FOR CAST IRON COLUMNS WITH TURNED CAPITALS AND BASES.

Height in Feet.	External Diameter, 12 inches.				External Diameter, 13 inches.				External Diameter, 14 inches.				External Diameter, 15 inches.				External Diameter, 16 inches.			
	Thickness of Metal.				Thickness of Metal.				Thickness of Metal.				Thickness of Metal.				Thickness of Metal.			
	1"	1½"	1½"	2"	1"	1½"	1½"	2"	1"	1½"	1½"	2"	1"	1½"	1½"	2"	1"	1½"	1½"	2"
7	190.8	231.7	269.8	338.0	213.4	259.0	303.5	382.9	236.0	288.1	337.4	427.8	258.5	316.3	371.2	472.9	281.1	344.4	405.0	517.8
8	181.8	220.5	256.3	320.5	204.3	247.6	290.0	364.9	226.9	276.7	323.7	409.8	249.5	304.9	357.6	454.8	272.0	333.0	391.4	499.8
9	172.8	209.3	243.1	303.1	195.2	236.5	276.5	347.1	217.8	265.2	310.1	391.8	240.2	293.4	343.8	436.5	262.8	323.1	377.5	481.5
10	164.1	198.5	230.3	286.4	186.2	225.3	263.3	329.8	208.6	253.9	296.6	374.0	231.0	281.8	330.1	418.3	253.5	310.0	363.6	463.0
11	155.7	188.1	218.0	270.5	177.5	214.6	250.3	313.1	199.6	242.8	283.3	356.6	221.9	270.6	316.4	400.5	244.1	298.3	349.8	444.8
12	147.6	178.1	206.2	255.3	169.0	204.1	238.0	297.0	190.8	231.9	270.3	339.7	212.8	259.3	303.1	383.0	235.0	287.0	336.2	427.1
13	139.9	168.7	195.1	241.0	160.9	194.2	226.1	281.6	182.3	221.4	257.9	323.5	204.1	248.5	290.3	366.1	226.0	275.7	322.9	409.4
14	132.6	159.7	184.5	227.5	153.1	184.6	214.8	267.1	174.2	211.3	246.0	308.1	195.6	237.9	277.7	349.8	217.2	264.8	309.9	392.5
15	125.7	151.3	174.6	214.9	145.7	175.6	204.0	253.3	166.3	201.6	234.5	293.3	187.4	227.8	265.7	334.3	208.6	254.3	297.4	376.1
16	119.2	143.3	165.3	203.1	138.7	167.0	193.9	240.3	158.9	192.5	223.6	279.3	179.5	218.0	254.1	319.3	200.4	244.1	285.3	360.3
17	113.1	135.9	156.6	192.1	132.0	159.0	184.3	228.1	151.8	183.7	213.3	266.0	171.9	208.7	243.1	305.0	192.5	234.3	273.7	345.3
18	107.4	128.9	148.4	181.8	125.8	151.3	175.3	216.6	145.0	175.3	203.5	253.4	164.7	199.8	232.6	291.5	184.8	224.9	262.5	330.8
19	102.0	122.3	140.8	172.2	119.8	144.1	166.8	205.9	138.5	167.5	194.2	241.5	157.8	191.3	222.6	278.6	177.5	215.8	251.8	317.0
20	97.0	116.2	133.6	163.3	114.2	137.3	158.8	195.8	132.5	160.0	185.4	230.3	151.2	183.3	213.1	266.4	170.5	207.2	241.7	303.9
21	92.3	110.5	127.0	154.9	109.0	130.9	151.3	186.3	126.6	152.9	177.1	219.8	145.0	175.6	204.0	254.8	163.8	199.0	232.0	291.3
22	87.8	105.1	120.8	147.1	104.0	124.9	144.3	177.5	121.2	146.2	169.3	209.9	139.0	168.3	195.5	243.9	157.4	191.1	222.7	279.1
23	83.7	100.1	115.0	140.0	99.3	119.2	137.7	169.1	116.0	140.0	161.9	200.5	133.3	161.4	187.3	233.5	151.3	186.3	213.9	262.5
24	79.8	95.5	109.5	133.2	95.0	113.9	131.5	161.4	111.1	134.0	155.0	191.7	128.9	148.6	179.6	223.8	145.5	176.5	205.5	257.4
25	76.2	92.1	104.4	126.9	90.8	108.9	125.6	154.1	106.5	128.3	148.4	183.8	122.9	148.6	172.4	214.5	140.0	169.7	197.5	247.2

DEARBORN FOUNDRY COMPANY.

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SAFE LOAD, IN TONS OF 2,000 LBS., FOR CAST IRON SQUARE COLUMNS, WITH
TURNED CAPITALS AND BASES. FACTOR OF SAFETY OF 8.

Height in feet.	4'x4' square					5'x5' square					6'x6' square					7'x7' square					8'x8' square					9'x9' square						
	Thickness of Metal.					Thickness of Metal.					Thickness of Metal.					Thickness of Metal.					Thickness of Metal.					Thickness of Metal.						
	½"	¾"	1"	1 ¼"	1 ½"	¾"	1"	1 ¼"	1 ½"	¾"	1"	1 ¼"	1 ½"	¾"	1"	1 ¼"	1 ½"	¾"	1"	1 ¼"	1 ½"	¾"	1"	1 ¼"	1 ½"	¾"	1"	1 ¼"	1 ½"	¾"	1"	1 ¼"	1 ½"
7	16.6	20.0	23.1	26.0	32.0	37.3	42.3	46.9	52.8	60.1	67.1	79.6	68.9	88.2	105.0	121.0	85.2	109.0	132.0	152.0	101.0	131.0	159.0	184.0	96.2	124.0	150.0	174.0	96.2	124.0	150.0	174.0
8	14.3	17.2	19.9	22.4	28.4	33.1	37.5	41.6	48.0	54.6	60.9	72.2	63.8	81.6	97.8	112.0	79.9	102.0	124.0	143.0	79.9	102.0	124.0	143.0	90.9	117.0	142.0	165.0	90.9	117.0	142.0	165.0
9	12.4	14.9	17.2	19.3	25.2	29.4	33.3	36.9	43.5	49.5	55.2	65.5	58.8	75.3	90.2	103.0	74.6	96.1	115.0	133.0	74.6	96.1	115.0	133.0	85.7	110.0	134.0	155.0	85.7	110.0	134.0	155.0
10	10.7	12.9	15.0	16.8	22.4	26.1	29.5	32.7	39.3	44.8	50.0	59.3	54.1	69.1	83.0	95.3	64.7	89.6	108.0	124.0	64.7	89.6	108.0	124.0	80.3	103.0	125.0	146.0	80.3	103.0	125.0	146.0
11	9.4	11.3	13.0	14.6	19.9	23.2	26.3	29.2	35.6	40.5	45.2	53.7	49.7	63.7	76.3	87.6	60.1	77.3	93.2	107.0	60.1	77.3	93.2	107.0	75.4	97.5	118.0	137.0	75.4	97.5	118.0	137.0
12	8.2	9.9	11.5	12.9	17.8	20.7	23.4	26.0	32.2	36.7	40.9	48.6	45.5	58.2	69.7	80.0	55.7	71.7	86.5	100.0	55.7	71.7	86.5	100.0	70.7	91.3	110.0	128.0	70.7	91.3	110.0	128.0
13	7.2	8.7	10.1	11.3	15.9	18.5	21.0	23.3	29.2	33.3	37.1	44.1	41.8	53.5	64.1	73.5	51.7	66.5	80.2	92.7	51.7	66.5	80.2	92.7	66.0	85.3	103.0	120.0	66.0	85.3	103.0	120.0
14	6.4	7.8	9.0	10.1	14.3	16.6	18.8	20.9	26.6	30.3	33.7	40.1	38.4	49.1	58.9	67.6	48.0	61.8	74.4	86.0	48.0	61.8	74.4	86.0	61.8	80.0	96.8	112.0	61.8	80.0	96.8	112.0
15	5.7	6.9	8.0	9.0	12.8	15.0	17.0	18.8	24.2	27.5	30.7	36.5	35.3	45.2	54.2	62.2	44.5	57.3	69.1	79.9	44.5	57.3	69.1	79.9	57.9	74.9	90.7	105.0	57.9	74.9	90.7	105.0
16	5.1	6.2	7.2	8.0	11.6	13.0	15.4	17.0	22.1	25.1	28.0	33.3	32.5	41.7	49.9	57.3	41.4	53.3	64.2	74.2	41.4	53.3	64.2	74.2	54.0	70.0	84.6	98.3	54.0	70.0	84.6	98.3
17	4.6	5.6	6.4	7.2	10.6	12.3	13.9	15.5	20.2	23.0	25.7	30.5	30.0	38.5	46.1	52.9	38.5	49.5	59.8	69.0	38.5	49.5	59.8	69.0	50.7	65.5	79.3	92.2	50.7	65.5	79.3	92.2
18	4.2	5.0	5.8	6.6	9.6	11.2	12.7	14.1	18.5	21.1	23.5	28.0	27.6	35.4	42.4	48.6	36.8	46.2	55.7	64.3	36.8	46.2	55.7	64.3	47.5	61.5	74.5	86.5	47.5	61.5	74.5	86.5
19	3.8	4.6	5.3	6.0	8.8	10.2	11.6	12.9	17.0	19.4	21.6	25.7	25.6	32.8	39.3	45.1	33.4	43.0	51.9	59.9	33.4	43.0	51.9	59.9	44.4	57.6	69.7	80.8	44.4	57.6	69.7	80.8
20	3.5	4.2	4.8	5.4	8.0	9.4	10.6	11.8	15.7	17.9	20.0	23.7	23.7	30.4	36.2	41.8	31.2	40.2	48.4	56.0	31.2	40.2	48.4	56.0	41.8	54.0	65.4	76.0	41.8	54.0	65.4	76.0
21	3.2	3.8	4.4	5.0	7.4	8.6	9.8	10.8	14.5	16.5	18.4	21.9	22.1	28.3	33.9	38.9	29.2	37.6	45.3	52.3	29.2	37.6	45.3	52.3	39.3	50.8	61.5	71.5	39.3	50.8	61.5	71.5
22	3.0	3.6	4.2	4.8	7.0	8.1	9.2	10.1	13.4	15.3	17.1	20.3	20.5	26.3	31.5	36.2	27.3	35.2	42.4	49.0	27.3	35.2	42.4	49.0	36.8	47.6	57.7	67.0	36.8	47.6	57.7	67.0
23	2.8	3.4	4.0	4.6	6.6	7.7	8.7	9.6	12.5	14.2	15.8	18.8	19.2	24.6	29.4	33.8	25.6	33.0	39.7	45.9	25.6	33.0	39.7	45.9	34.7	44.9	54.4	63.1	34.7	44.9	54.4	63.1
24	2.6	3.2	3.8	4.4	6.2	7.3	8.2	9.1	11.9	13.6	15.2	17.5	17.9	22.9	27.5	31.5	24.0	30.9	37.3	43.1	24.0	30.9	37.3	43.1	32.8	42.4	51.3	59.6	32.8	42.4	51.3	59.6
25	2.4	3.0	3.6	4.2	6.0	7.1	8.0	8.9	11.7	13.3	14.8	16.9	16.7	21.4	25.7	29.5	22.6	29.1	35.1	40.6	22.6	29.1	35.1	40.6	30.8	39.9	48.3	56.1	30.8	39.9	48.3	56.1
26	2.2	2.8	3.4	4.0	5.8	6.9	7.8	8.7	11.5	13.1	14.6	16.5	15.6	20.0	24.0	27.6	22.6	29.1	35.1	40.6	22.6	29.1	35.1	40.6	29.1	37.7	45.6	53.0	29.1	37.7	45.6	53.0
27	2.0	2.6	3.2	3.8	5.6	6.7	7.6	8.5	11.3	12.9	14.4	16.3	17.9	22.9	27.5	31.5	22.6	29.1	35.1	40.6	22.6	29.1	35.1	40.6	29.1	37.7	45.6	53.0	29.1	37.7	45.6	53.0

DEARBORN FOUNDRY COMPANY.

SAFE LOAD, IN TONS OF 2,000 LBS., FOR CAST IRON SQUARE COLUMNS, WITH
TURNED CAPITALS AND BASES. FACTOR OF SAFETY 8.

Height in Feet	10" x 10" square					11" x 11" square					12" x 12" square					13" x 13" square					14" x 14" square					
	Thickness of Metal					Thickness of Metal					Thickness of Metal					Thickness of Metal					Thickness of Metal					
	¾"	1"	1¼"	1½"	1¾"	¾"	1"	1¼"	1½"	1¾"	2"	¾"	1"	1¼"	1½"	1¾"	2"	1"	1¼"	1½"	1¾"	2"	1"	1¼"	1½"	1¾"	2"
7	117	152	184	215	248	134	174	212	248	280	150	195	239	280	356	217	265	311	358	398	238	292	344	440		
8	112	146	177	207	239	129	168	204	239	271	145	189	231	271	344	210	258	303	356	396	232	285	335	429		
9	107	139	169	197	229	123	161	196	229	261	140	182	223	261	332	204	250	294	347	386	226	277	326	417		
10	102	132	160	187	219	118	154	187	219	252	135	176	215	252	320	198	242	284	333	372	220	269	317	406		
11	96	125	152	177	209	113	147	179	209	241	129	168	206	241	307	191	234	274	320	359	212	261	307	393		
12	91	118	144	167	199	107	139	170	199	231	124	161	197	231	294	183	224	263	306	345	205	251	296	379		
13	86	111	136	158	189	102	132	162	189	221	118	154	188	221	281	176	216	253	293	332	198	243	286	366		
14	81	105	128	149	180	97	126	154	180	211	113	147	180	211	268	169	207	243	283	310	191	234	275	352		
15	76	99	120	140	171	92	120	146	171	201	108	140	172	201	256	162	199	233	267	297	183	224	264	338		
16	72	93	113	132	162	87	114	139	162	192	102	134	163	192	243	155	189	223	255	285	176	216	254	326		
17	68	88	107	124	153	82	107	131	153	182	97	127	155	182	232	148	181	213	242	272	169	207	244	313		
18	64	83	101	117	145	78	102	124	145	174	93	121	148	174	220	142	173	204	230	260	163	200	235	301		
19	60	78	95	110	137	74	96	117	137	165	88	115	141	165	210	135	166	195	224	254	156	191	225	288		
20	56	73	89	104	130	70	91	111	130	157	84	110	134	157	200	129	159	186	218	248	150	184	216	277		
21	53	69	84	98	123	66	86	105	123	149	80	104	127	149	190	124	152	178	207	237	143	176	207	265		
22	50	65	79	92	116	63	81	99	116	142	76	99	121	142	180	118	144	169	216	246	137	168	198	254		
23	47	62	75	87	110	59	77	94	110	135	72	94	115	135	172	113	138	162	207	237	131	161	190	243		
24	44	58	71	82	104	56	73	89	104	129	69	90	110	129	163	108	132	155	198	228	126	154	182	233		
25	42	55	67	78	99	53	69	85	99	122	65	85	104	122	156	102	125	147	188	218	121	148	174	223		
26	40	52	63	74	94	51	66	81	94	117	62	81	99	117	148	98	120	141	180	210	115	142	167	213		
27	38	49	60	70	90	48	63	77	90	111	59	77	95	111	141	94	115	135	172	202	111	136	160	205		
28	36	47	57	66	86	46	60	73	86	106	57	74	90	106	135	90	110	129	165	195	106	130	153	196		

SAFE LOAD, IN TONS OF 2,000 LBS., FOR CAST IRON SQUARE COLUMNS, WITH
TURNED CAPITALS AND BASES. FACTOR OF SAFETY 8.

Height in feet	15" x 15" square					16" x 16" square					17" x 17" square					18" x 18" square					19" x 19" square				
	Thickness of Metal					Thickness of Metal					Thickness of Metal					Thickness of Metal					Thickness of Metal				
	1"	1 1/4"	1 1/2"	2"		1"	1 1/4"	1 1/2"	2"		1"	1 1/4"	1 1/2"	2"		1"	1 1/4"	1 1/2"	2"		1"	1 1/4"	1 1/2"	2"	2 1/2"
7	259	318	375	482		281	345	407	525		301	371	438	565		322	396	469	606		343	423	500	648	788
8	253	312	366	472		275	338	399	514		296	364	430	555		317	390	462	597		338	417	493	639	776
9	247	304	357	461		269	331	390	503		290	357	422	545		312	384	454	587		332	410	485	628	764
10	241	296	348	449		263	323	381	491		284	349	413	533		306	376	445	576		327	403	477	618	751
11	234	287	339	436		256	314	371	479		278	341	404	521		299	368	436	564		321	395	469	606	737
12	227	279	329	422		250	306	362	466		271	343	394	509		293	361	427	551		314	387	459	598	722
13	220	271	319	409		243	298	352	453		264	325	384	495		286	352	417	539		308	379	449	582	706
14	212	262	308	396		235	289	341	440		256	316	373	481		280	344	407	526		301	371	438	570	690
15	205	253	297	382		228	280	330	426		249	307	362	468		272	335	396	513		294	362	428	556	674
16	198	244	287	369		221	271	320	413		242	298	352	455		264	325	385	498		287	354	418	541	658
17	191	235	276	356		213	262	309	399		235	289	342	441		257	316	374	484		279	345	407	527	641
18	184	226	266	343		206	253	299	385		228	280	331	427		250	308	364	471		272	335	397	514	624
19	177	218	256	330		199	245	289	372		220	271	321	414		243	299	353	457		265	326	386	500	607
20	170	210	247	317		192	236	278	359		213	263	311	401		235	290	342	443		258	318	376	487	591
21	164	202	237	305		185	228	268	346		206	254	300	388		228	281	332	429		251	309	365	473	574
22	157	194	227	293		178	219	258	333		199	245	290	375		221	273	322	416		243	300	354	459	557
23	151	186	218	282		172	211	249	321		192	237	280	361		214	264	312	403		236	291	343	445	541
24	145	179	210	271		166	203	240	309		185	238	270	348		207	255	302	390		229	282	334	432	525
25	140	172	202	260		160	196	231	298		178	220	260	336		201	247	292	378		222	273	324	419	506
26	134	165	194	250		154	189	223	287		172	212	251	324		194	239	283	366		215	265	314	407	493
27	129	159	186	240		148	182	215	277		167	205	242	313		187	231	273	353		208	257	304	394	478
28	124	152	178	231		143	175	207	267		161	198	234	303		181	223	264	341		202	249	295	382	463

**SAFE LOAD, IN TONS OF 2,000 LBS., FOR CAST IRON SQUARE COLUMNS, WITH
TURNED CAPITALS AND BASES. FACTOR OF SAFETY 8.**

Height in Feet.	20" x 20" square					21" x 21" square					22" x 22" square					24" x 24" square				
	Thickness of Metal.					Thickness of Metal.					Thickness of Metal.					Thickness of Metal.				
	1"	1 1/4"	1 1/2"	2"	2 1/2"	1"	1 1/4"	1 1/2"	2"	2 1/2"	1"	1 1/4"	1 1/2"	2"	2 1/2"	1 1/4"	1 1/2"	2"	2 1/2"	3"
7	364	449	532	690	838	385	475	563	731	890	405	500	593	772	940	552	655	854	1041	1221
8	359	443	525	681	827	380	469	556	722	879	400	494	586	763	929	547	649	846	1032	1210
9	354	437	518	671	815	375	463	549	713	868	395	488	579	754	917	541	642	837	1022	1199
10	349	430	510	660	802	370	457	542	703	856	390	481	571	744	905	535	635	828	1010	1185
11	343	422	500	648	788	364	450	534	692	842	385	475	563	733	893	529	628	819	999	1171
12	336	414	491	636	773	357	441	525	680	826	379	468	555	722	879	522	620	808	986	1155
13	330	407	482	625	759	351	433	515	667	811	373	461	546	710	865	515	610	795	971	1137
14	323	398	472	613	744	345	425	504	655	797	366	453	536	698	850	507	601	783	957	1120
15	316	390	462	600	728	338	417	494	642	781	360	445	527	685	835	499	591	771	943	1103
16	309	380	451	586	711	331	409	484	630	765	353	436	517	672	819	490	581	758	926	1085
17	302	372	441	572	694	324	400	474	616	749	346	428	506	659	803	481	571	745	910	1066
18	294	363	430	558	677	316	391	463	603	732	338	419	496	645	786	472	561	732	895	1048
19	286	354	419	544	660	309	381	452	587	715	331	409	485	631	769	464	551	719	878	1029
20	279	345	409	530	644	302	372	441	573	698	323	400	474	617	752	455	540	704	860	1009
21	272	336	398	516	627	294	363	430	559	681	316	391	463	603	735	446	530	690	843	988
22	265	326	387	502	610	286	353	419	544	663	309	382	453	589	718	437	518	676	825	967
23	258	317	376	488	593	279	344	408	530	645	302	373	442	575	700	428	507	662	808	947
24	250	308	366	474	576	272	335	398	517	629	294	364	431	561	683	419	496	647	791	926
25	243	300	355	461	560	265	326	388	503	613	287	355	421	547	667	409	485	632	772	905
26	236	291	345	448	543	258	318	377	490	597	280	346	410	533	650	400	473	617	754	884
27	229	283	335	435	528	251	310	367	477	581	272	337	399	519	623	391	463	603	737	864
28	222	275	325	422	513	244	301	357	463	565	265	328	389	506	616	382	453	590	721	845

DEARBORN FOUNDRY COMPANY.

SAFE LOAD, IN TONS OF 2,000 LBS., FOR CAST IRON RECTANGULAR COLUMNS,
WITH TURNED CAPITALS AND BASES. FACTOR OF SAFETY 8.

Height in Feet.	3' x 4'			3' x 6'			4' x 6"			4' x 8"			5' x 7"			5' x 10"			6' x 8"			6' x 9"		
	Thickness of Metal.			Thickn's of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.		
	¾"	1"	1 ¼"	¾"	1"	1 ¼"	¾"	1"	1 ¼"	¾"	1"	1 ¼"	¾"	1"	1 ¼"	¾"	1"	1 ¼"	¾"	1"	1 ¼"	¾"	1"	1 ¼"
7	13.9	15.5	16.9	19.0	23.6	30.3	38.0	47.6	56.0	46.2	59.1	70.0	59.4	76.2	91.6	59.4	76.2	91.6	62.9	80.5	96.5	68.0	87.3	105
8	11.6	12.9	14.0	15.8	19.5	26.2	33.0	41.0	48.7	41.1	52.0	61.0	52.7	67.7	81.3	52.7	67.7	81.3	57.0	73.0	87.7	61.5	79.3	95
9	9.5	10.7	11.8	13.3	16.5	22.7	28.3	35.5	42.1	36.5	46.2	54.8	46.7	60.1	72.2	46.7	60.1	72.2	51.8	66.3	79.4	56.0	71.8	86
10	8.3	9.2	10.0	11.3	14.2	19.5	25.0	31.0	37.0	32.3	41.0	48.7	41.5	53.3	64.0	41.5	53.3	64.0	46.8	60.0	71.8	50.6	65.0	78
11	7.1	7.9	8.6	9.7	12.0	17.0	21.6	25.3	32.0	28.6	36.7	43.3	37.0	47.7	57.0	37.0	47.7	57.0	42.4	54.0	65.5	46.0	59.0	71
12	6.1	6.8	7.5	8.3	10.4	15.0	18.8	22.0	28.0	25.5	32.5	38.6	33.0	42.3	50.6	33.0	42.3	50.6	38.4	49.2	58.9	41.5	53.3	64
13	5.3	5.9	6.4	7.3	9.0	13.3	16.5	19.5	25.0	23.0	29.2	35.0	28.2	37.8	46.0	28.2	37.8	46.0	35.3	45.0	53.5	37.2	48.5	58
14	4.7	5.2	5.7	6.4	8.0	11.7	14.7	17.5	22.1	27.0	26.3	31.5	25.9	34.0	41.0	25.9	34.0	41.0	32.0	41.0	48.5	34.0	44.0	53
15	4.2	4.7	5.0	5.5	7.0	10.5	13.2	15.5	19.7	18.6	23.6	28.3	23.9	30.7	36.8	23.9	30.7	36.8	28.9	36.9	44.3	31.1	40.0	48
16	3.7	4.1	4.5	5.0	6.2	9.5	11.7	14.0	17.5	16.8	21.2	25.5	21.5	28.0	33.5	21.5	28.0	33.5	26.4	34.0	40.5	28.3	37.0	44
17	3.3	3.7	4.0	4.5	5.5	8.6	10.5	12.4	15.8	15.3	19.3	23.0	19.5	25.5	30.3	19.5	25.5	30.3	24.0	31.0	37.0	26.0	33.5	40
18	3.0	3.3	3.6	4.1	5.0	7.7	9.5	11.2	14.3	13.9	17.6	21.0	17.9	23.0	27.5	17.9	23.0	27.5	22.0	28.3	33.9	23.9	30.7	36
19	.....	.....	.....	.....	.....	6.9	8.5	10.2	13.0	12.8	16.1	19.0	16.4	21.0	25.0	20.3	26.0	31.2	22.0	28.2	34			
20	.....	.....	.....	.....	.....	6.2	7.7	9.4	11.8	11.7	14.8	17.5	15.0	19.3	23.1	18.7	24.0	28.7	20.3	26.0	31			
21	.....	.....	.....	.....	.....	5.7	7.1	8.6	10.7	10.8	13.6	16.2	13.8	17.7	21.2	17.3	22.2	26.6	18.7	24.0	28			
22	.....	.....	.....	.....	.....	5.2	6.5	7.9	9.8	10.0	12.5	14.9	12.8	16.2	19.5	12.8	16.2	19.5	16.0	20.5	24.7	17.3	22.3	26
23	.....	.....	.....	.....	.....	4.9	6.1	7.3	9.1	9.2	11.5	13.8	11.8	15.0	18.0	11.8	15.0	18.0	14.9	19.0	22.8	16.1	20.7	24
24	.....	.....	.....	.....	.....	4.6	5.7	6.8	8.5	8.5	10.7	12.8	10.9	14.0	16.8	13.9	17.7	21.0	15.0	19.2	23			
25	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.9	10.0	11.9	10.0	13.0	15.6	12.9	16.5	19.3	14.0	17.9	21			

**SAFE LOAD, IN TONS OF 2,000 LBS., FOR CAST IRON RECTANGULAR COLUMNS.
WITH TURNED CAPITALS AND BASES. FACTOR OF SAFETY 8.**

Height in Feet.	6" x 10"			6" x 12"			7" x 10"			7" x 12"			7" x 14"			8" x 10"			8" x 12"			8" x 14"		
	Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.		
	¾"	1"	1½"	¾"	1"	1½"	¾"	1"	1½"	¾"	1"	1½"	¾"	1"	1½"	¾"	1"	1½"	¾"	1"	1½"	¾"	1"	1½"
7	73.0	94.0	113	83.0	107	130	85.5	110	133	96.5	125	151	107	139	170	96.9	125	152	103	141	171	121	156	191
8	68.5	85.0	103	75.0	97	118	79.0	102	123	89.0	115	140	99	129	157	89.2	117	142	102	132	160	112	147	179
9	60.1	77.2	93	68.0	88	107	73.0	94	113	82.5	106	129	92	119	145	84.7	110	133	95	123	150	105	137	167
10	54.3	70.0	84	61.8	80	96	67.5	87	105	76.0	98	120	85	110	134	79.2	102	124	88	115	140	98	128	156
11	49.0	63.7	76	56.0	73	87	62.0	80	96	70.0	90	110	78	101	123	73.6	95	116	82	107	130	91	119	145
12	44.5	57.3	69	50.7	65	79	56.5	72	88	63.8	82	100	71	93	112	68.0	88	107	77	99	120	85	110	134
13	40.3	51.5	63	46.2	59	72	51.5	66	81	58.5	76	92	65	85	103	63.4	82	99	71	92	112	79	102	125
14	36.6	47.0	57	42.0	54	65	47.6	61	74	53.8	69	84	60	77	94	58.8	76	92	66	85	104	73	95	116
15	33.4	43.0	51	38.0	49	59	43.8	56	68	49.6	64	78	55	72	87	54.7	70	85	61	79	96	68	88	107
16	30.8	39.3	47	35.0	45	54	40.5	52	63	45.5	59	72	51	66	81	50.9	65	79	56	74	90	63	82	100
17	28.0	36.0	43	32.0	41	49	37.3	48	58	42.0	54	66	47	61	74	47.0	61	74	52	68	83	58	76	93
18	25.6	33.0	39	29.2	37	45	34.3	44	53	38.8	50	60	43	56	68	43.9	56	68	49	63	77	54	70	86
19	23.5	30.5	36	26.8	34	42	32.0	41	49	36.0	46	56	40	52	63	40.0	52	63	46	59	72	51	66	80
20	21.7	28.0	33	24.7	32	38	29.8	38	46	33.5	43	52	37	48	58	37.8	49	59	43	55	67	47	61	75
21	20.1	25.8	31	22.9	29	35	27.5	35	42	31.0	40	48	34	44	54	35.2	45	55	40	51	63	44	57	70
22	18.7	23.8	28	21.3	27	33	25.6	33	40	28.6	37	45	32	42	51	32.7	43	51	37	48	58	41	53	65
23	17.3	22.1	26	19.7	25	30	23.8	30	37	26.6	34	42	30	39	47	30.8	40	48	35	45	55	38	50	61
24	16.0	20.6	24	18.3	23	28	22.2	28	34	25.1	32	39	28	36	44	29.2	39	45	32	42	51	36	47	57
25	15.0	19.3	23	17.0	22	26	20.7	26	32	24.0	30	37	26	34	41	27.8	37	43	31	40	48	34	44	54

SAFE LOAD, IN TONS OF 2,000 LBS., FOR CAST IRON RECTANGULAR COLUMNS,
WITH TURNED CAPITALS AND BASES. FACTOR OF SAFETY 8.

Height in Feet.	8" x 16"			9" x 12"			9" x 14"			9" x 16"			9" x 18"			10" x 15"			10" x 18"			10" x 20"		
	Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.			Thickness of Metal.		
	¾"	1"	1¼"	¾"	1"	1¼"	¾"	1"	1¼"	¾"	1"	1¼"	¾"	1"	1¼"	¾"	1"	1¼"	¾"	1"	1¼"	¾"	1"	1¼"
7	132	172	210	120	156	190	133	173	210	145	189	231	157	205	252	150	196	239	163	221	271	182	238	292
8	123	161	197	113	148	180	126	163	199	137	179	219	149	194	238	143	187	228	161	211	258	173	228	279
9	115	151	184	107	140	169	119	154	188	129	169	207	141	184	225	136	178	217	133	201	246	165	217	266
10	108	140	172	101	132	159	112	145	177	122	159	195	133	173	212	129	169	206	146	191	234	157	206	253
11	101	130	159	95	124	150	105	136	166	115	149	183	125	163	199	122	160	195	138	181	222	149	195	240
12	93	121	148	89	116	141	98	128	156	108	140	172	117	153	187	116	151	184	131	171	210	141	184	226
13	86	112	137	83	108	132	92	120	146	101	131	162	110	143	175	110	143	174	124	161	198	133	174	213
14	80	104	127	78	101	124	86	112	137	94	123	151	103	134	164	104	135	164	117	152	187	125	164	201
15	74	97	118	73	95	116	81	105	128	88	115	141	96	125	153	98	127	155	110	143	176	118	155	190
16	69	90	110	68	89	108	76	98	120	82	107	132	90	117	143	92	120	146	104	135	166	111	146	179
17	64	83	102	64	83	101	71	92	112	77	100	123	84	109	134	86	113	138	98	127	156	105	138	169
18	59	78	95	60	78	95	66	86	105	72	94	115	78	102	125	81	106	130	92	120	147	99	130	159
19	55	72	89	56	73	89	62	81	98	68	88	108	73	96	118	76	100	123	86	113	139	93	122	150
20	51	67	83	53	68	84	58	76	92	64	83	101	68	90	110	72	94	115	81	106	131	88	115	141
21	48	63	77	50	64	78	54	71	86	60	78	95	64	84	103	68	89	108	77	100	123	83	109	133
22	45	59	72	47	60	74	51	67	81	56	73	89	60	79	97	64	84	102	72	94	116	78	103	125
23	42	55	68	44	57	69	48	63	76	53	69	84	57	74	91	60	79	96	68	89	110	74	97	118
24	39	52	63	41	54	65	45	59	72	50	65	79	54	70	86	57	75	91	65	84	104	70	91	112
25	38	49	59	39	51	61	43	56	68	47	61	75	51	66	81	54	71	86	61	80	98	66	85	106

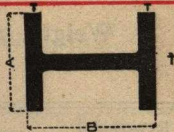
DEARBORN FOUNDRY COMPANY.

SAFE LOAD, IN TONS OF 2,000 LBS., FOR CAST IRON RECTANGULAR COLUMNS,
WITH TURNED CAPITALS AND BASES. FACTOR OF SAFETY 8.

Height in feet	11" x 15"			11" x 18"			11" x 22"			12" x 14"			12" x 16"			12" x 18"			12" x 20"			12" x 24"		
	Thickness of Metal.		1"	Thickness of Metal.		1"	Thickness of Metal.		1"	Thickness of Metal.		1"	Thickness of Metal.		1"	Thickness of Metal.		1"	Thickness of Metal.		1"	Thickness of Metal.		1"
	14"	1½"		14"	1½"		14"	1½"		14"	1½"		14"	1½"		14"	1½"		14"	1½"		14"	1½"	
7	209	254	301	236	289	340	271	333	393	214	262	307	232	284	334	249	303	361	267	328	388	303	373	441
8	201	245	290	227	278	327	261	321	378	207	253	297	224	275	323	241	294	349	258	317	375	293	361	426
9	193	236	278	218	267	314	250	308	362	200	244	287	216	265	312	233	285	337	249	306	362	283	348	411
10	185	226	266	208	256	301	239	294	346	192	235	276	208	255	300	224	275	324	240	295	348	272	335	396
11	176	216	254	198	244	287	228	280	330	184	226	265	200	244	288	215	264	311	231	284	334	261	322	381
12	167	206	242	189	232	273	217	267	314	177	217	253	191	234	276	206	253	298	221	272	320	250	308	365
13	159	196	230	180	220	260	206	253	299	169	207	242	183	224	264	197	242	285	211	260	306	239	294	349
14	151	186	218	171	209	247	195	240	284	161	197	231	175	214	252	188	231	272	201	248	292	228	281	333
15	143	176	207	162	198	234	185	228	269	154	188	221	167	204	240	179	220	259	192	236	278	218	268	317
16	136	166	196	154	188	222	175	216	256	146	179	210	159	194	229	171	210	247	183	225	265	208	255	302
17	129	157	186	146	178	210	166	205	243	139	171	200	151	185	218	163	200	235	174	214	253	198	243	287
18	122	149	176	138	169	199	157	194	231	132	162	190	144	176	207	155	190	224	166	204	241	188	231	273
19	116	141	167	130	160	188	149	184	219	126	154	181	137	167	197	147	181	213	158	194	229	179	220	260
20	110	133	158	123	151	178	141	174	207	120	147	172	130	159	188	140	172	203	150	185	218	170	209	248
21	104	126	150	116	143	169	134	165	196	114	140	164	124	151	179	133	164	193	143	176	207	162	199	236
22	98	120	142	110	136	160	127	156	185	108	133	156	118	144	170	127	156	184	136	167	197	154	190	224
23	93	114	134	104	129	152	120	148	175	103	127	149	112	137	162	121	148	175	129	159	188	147	181	213
24	88	108	127	99	122	144	114	140	165	98	121	142	107	131	154	115	141	166	123	151	179	140	172	203
25	83	102	120	94	116	136	108	132	155	94	115	135	102	125	146	109	134	158	117	144	170	133	164	193

SAFE LOADS FOR H-SHAPED CAST-IRON POSTS.

IN TONS OF 2,000 LBS.
FACTOR OF SAFETY 6



SIZE OF POST IN INCHES.			Area in Ins.	LENGTH OF POST IN FEET.							
a.	b.	t.		10	12	13	14	15	16	18	20
6× 6× ¾	12%		40	33	31	27					
6× 6× 1	16		52	43	40	35					
6× 6× 1¼	19%		64	52	48	42					
6× 8× ¾	13%		45	37	34	30					
6× 8× 1	18		59	48	45	39					
6× 8× 1¼	21%		72	59	54	49					
7× 7× 1	19		72	59	57	54	47				
7× 7× 1¼	23½		88	71	69	66	58				
7× 9× 1	21		80	85	63	60	52				
7× 9× 1¼	25%		97	79	77	72	64				
8× 8× ¾	16%		72	60	55	52	48	45			
8× 8× 1	22		93	79	72	68	64	59			
8× 8× 1¼	26%		114	96	88	83	78	72			
8× 10× 1	24		102	86	79	74	69	65			
8× 10× 1¼	29%		125	105	97	91	85	79			
8× 10× 1½	34%		146	124	114	107	100	93			
9× 9× 1	25		116	100	96	90	82	75	67		
9× 9× 1¼	30%		142	122	118	110	102	92	82		
9× 9× 1½	36		167	144	138	129	120	108	97		
9× 10× 1	26		121	104	100	94	86	78	70		
9× 10× 1¼	31%		148	127	123	115	106	96	86		
9× 10× 1½	37½		174	150	144	135	125	112	101		
10× 10× 1	28		137	123	116	109	102	96	85		
10× 10× 1¼	34%		168	151	142	134	126	118	104		
10× 10× 1½	40%		198	178	168	158	149	139	123		
10× 10× 1¾	46%		227	204	192	180	170	160	141		
10× 12× 1	30		147	132	124	117	110	103	91		
10× 12× 1¼	36%		180	162	153	144	135	127	112		
10× 12× 1½	43%		213	191	180	169	160	150	132		
10× 12× 1¾	49%		244	219	207	194	183	172	151		
10× 12× 2	56		274	246	232	218	206	193	170		
12× 12× 1	34		180	166	159	152	144	138	125	113	
12× 12× 1¼	41%		221	205	196	187	178	170	154	139	
12× 12× 1½	49½		262	242	232	221	210	201	182	164	
12× 12× 1¾	56%		301	278	266	254	242	231	209	189	
12× 12× 2	64		339	313	300	286	272	260	235	213	
12× 14× 1¼	44%		235	217	208	198	189	180	163	147	
12× 14× 1½	52½		278	257	246	235	223	213	193	174	
12× 14× 1¾	60%		320	295	283	270	257	245	222	201	
12× 14× 2	68		360	332	318	304	288	276	250	226	
12× 14× 2¼	75%		399	369	353	337	321	306	277	250	

Weight of Cast Iron Round Columns.

PER LINEAL FOOT.

External Diameter in Inches.	THICKNESS OF METAL.					
	$\frac{1}{4}$ In.	$\frac{3}{8}$ In.	$\frac{1}{2}$ In.	$\frac{5}{8}$ In.	$\frac{3}{4}$ In.	$\frac{7}{8}$ In.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
2	4.29	6.0	7.4	8.4	9.2	9.7
2½	5.52	7.8	10.0	11.5	12.9	14.0
3	6.75	9.7	12.3	14.6	16.6	18.3
3½	7.98	11.5	14.7	17.6	20.3	22.6
4	9.20	13.3	17.2	20.7	24.0	26.9
4½	10.4	15.2	19.6	23.8	27.7	31.1
5	11.7	17.0	22.1	26.9	31.5	35.4
5½	12.9	18.9	24.5	29.9	35.2	39.7
6	14.1	20.7	27.0	33.0	38.9	44.0
6½	15.3	22.5	29.5	36.1	42.6	48.3
7	16.6	24.4	31.9	39.1	46.4	52.6
7½	17.8	26.2	34.4	42.2	50.1	56.9
8	19.0	28.1	36.8	45.3	53.8	61.2
8½	20.3	29.9	39.3	48.3	57.5	65.5
9	21.5	31.8	41.7	51.4	61.3	69.8
9½	22.7	33.6	44.2	54.5	65.0	74.1
10	23.9	35.4	46.6	57.5	68.7	78.4
10½	25.2	37.3	49.1	60.6	72.3	82.7
11	26.4	39.1	51.5	63.7	76.0	87.0
11½	27.6	41.0	54.0	66.7	79.7	91.3
12	28.8	42.8	56.5	69.8	83.4	95.6
12½	30.0	44.6	58.9	72.9	87.0	99.9
13	31.3	46.5	61.4	75.9	90.7	104.2
13½	32.5	48.3	63.0	79.0	94.3	108.5
14	33.8	50.2	66.3	82.1	98.0	112.8
14½	35.0	52.0	68.7	85.1	101.7	117.0
15	36.2	53.8	71.2	88.2	105.4	121.3
15½	37.4	55.6	73.6	91.2	109.0	125.6
16	38.7	57.5	76.1	94.3	112.7	129.9
16½	39.9	59.3	78.5	97.4	116.3	134.2
17	41.1	61.2	81.0	100.5	120.0	138.5
17½	42.3	63.0	83.4	103.5	123.7	142.8
18	43.6	64.9	85.9	106.6	127.4	147.1
18½	44.8	66.7	88.3	109.7	131.0	151.4
19	46.0	68.6	90.8	112.8	134.7	155.7
19½	47.2	70.4	93.2	115.8	138.3	160.0
20	48.5	72.3	95.7	118.9	142.0	164.3
20½	49.7	74.1	98.1	121.9	145.7	168.6
21	50.9	75.9	100.6	125.0	149.4	172.9
21½	52.1	77.7	103.0	128.1	153.0	177.2
22	53.4	79.6	105.5	131.2	156.7	181.5
22½	54.6	81.4	108.0	134.2	160.3	185.8
23	55.8	83.3	110.5	137.3	164.0	190.1
23½	57.0	85.1	112.9	140.3	167.7	194.4
24	58.3	87.0	115.4	143.4	171.4	198.7
25	60.8	90.7	120.3	149.6	178.7	207.2
26	63.2	94.3	125.2	155.7	186.1	215.8
27	65.7	98.0	130.1	161.8	193.4	224.4
28	68.1	101.7	135.0	168.0	200.7	233.0
29	70.6	105.4	139.9	174.1	208.1	241.6
30	73.0	109.1	144.8	180.2	215.4	250.2

Weight of Cast Iron Round Columns.

PER LINEAL FOOT.

External Diameter in Inches.	THICKNESS OF METAL.					
	1 In.	1½ In.	1¾ In.	1½ In.	1¾ In.	2 In.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
2						
2½						
3	19.6					
3½	24.5	26.2				
4	29.5	31.7	33.7			
4½	34.4	37.3	39.9			
5	39.3	42.8	46.0	51.4		
5½	44.2	48.3	52.2	58.8		
6	49.1	53.9	58.3	66.3	77.0	78.5
6½	54.0	59.4	64.8	73.4	81.6	88.3
7	58.9	64.9	70.5	80.5	90.1	98.1
7½	63.8	70.4	76.3	87.5	98.7	107.9
8	68.7	76.0	82.5	95.4	107.4	117.5
8½	73.6	81.2	89.0	103.0	116.5	127.6
9	78.5	87.0	95.1	110.4	124.3	137.7
9½	83.4	92.5	101.2	117.8	133.2	146.7
10	88.4	98.0	107.4	125.2	141.7	157.1
10½	93.3	103.5	113.5	132.5	150.3	166.9
11	98.2	109.1	119.6	139.9	158.9	176.7
11½	103.1	114.6	125.8	147.3	167.5	186.5
12	108.0	120.0	131.9	154.6	176.9	196.3
12½	113.0	125.6	138.1	162.0	185.0	206.0
13	117.8	131.0	141.2	169.3	193.0	216.0
13½	122.9	136.7	150.8	176.7	201.4	226.0
14	127.6	142.0	156.4	184.1	210.1	236.0
14½	132.5	148.0	162.6	191.4	218.2	245.0
15	137.4	153.1	168.7	198.8	226.9	255.0
15½	142.4	159.1	174.9	206.2	235.6	265.0
16	147.3	164.2	181.0	213.5	244.2	275.0
16½	152.3	169.7	187.1	220.9	253.0	285.0
17	157.1	175.2	193.3	228.3	261.7	295.0
17½	162.0	180.8	199.6	235.9	270.0	304.0
18	166.9	186.2	205.5	243.3	278.6	314.0
18½	171.8	191.8	211.7	250.6	287.3	324.0
19	176.7	197.2	217.8	258.0	296.0	334.0
19½	181.6	202.7	223.9	265.4	304.7	344.0
20	186.5	208.4	230.2	272.7	312.8	353.0
20½	191.5	213.9	236.3	280.1	321.6	363.0
21	196.4	219.5	242.6	287.1	330.0	373.0
21½	201.3	220.5	248.7	294.5	338.7	383.0
22	206.2	230.5	254.8	301.8	347.4	393.0
22½	211.1	236.0	260.8	309.2	355.8	402.0
23	216.0	241.5	266.9	316.6	364.3	412.0
23½	220.9	247.0	273.0	323.9	373.0	422.0
24	225.8	252.5	279.1	331.3	381.7	432.0
25	235.6	263.2	290.9	345.5	398.7	451.0
26	245.4	274.3	303.2	360.1	415.8	470.0
27	255.3	285.3	315.4	374.9	433.1	490.0
28	265.1	296.3	327.7	389.6	450.2	510.0
29	274.9	307.3	339.9	404.3	467.4	529.0
30	284.7	318.3	352.2	409.0	484.5	549.0

Weight of Square or Rectangular Cast Iron Column Shafts per Lineal Foot.

EXAMPLE:—Column 6" x 10" x 1" x 10'0". $6'' + 10'' = 16'' \times 3 = 32$. Following out line on which 32 is found in left hand column to column headed 1", we find the weight per foot to be 87.5 pounds, which multiplied by 10' 0" = 875 pounds.

	THICKNESS OF METAL IN INCHES.								
	1/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 1/2"	1 3/4"	2"
12	18.6	21.1	23.3	25.0	26.4	27.3	28.1	....	....
14	22.5	25.8	28.7	31.3	33.4	35.1	37.5	....	....
16	26.4	30.5	34.2	37.5	40.4	43.0	46.9	49.2	50.0
18	30.3	35.2	39.7	43.8	47.4	50.8	56.3	60.2	62.5
20	34.2	39.8	45.1	50.0	54.5	58.6	65.6	71.1	75.0
22	38.1	44.5	50.6	56.3	61.5	66.4	75.0	82.0	87.5
24	42.0	49.2	56.1	62.5	68.5	74.2	84.4	93.0	100.0
26	45.9	53.9	61.5	68.8	75.6	82.0	93.8	103.9	112.5
28	49.8	58.6	67.0	75.0	82.6	89.8	103.7	114.8	125.0
30	53.7	63.3	72.5	81.3	89.6	97.7	112.5	125.8	137.5
32	57.6	68.0	77.9	87.5	96.7	105.5	121.9	136.7	150.0
34	61.5	72.7	83.4	93.8	103.7	113.3	131.3	147.7	162.5
36	65.4	77.3	88.9	100.0	110.7	121.1	140.6	158.6	175.0
38	69.3	82.0	94.3	106.3	117.8	128.9	150.0	169.5	187.5
40	73.2	86.7	99.8	112.5	124.8	136.7	159.4	180.5	200.0
42	77.1	91.4	105.3	118.8	131.8	144.5	168.8	191.4	212.5
44	81.0	96.1	110.8	125.0	138.8	152.3	178.1	202.3	225.0
46	84.9	100.8	116.2	131.3	145.9	160.2	187.5	213.3	237.5
48	88.8	105.5	121.7	137.5	152.9	168.0	196.9	224.2	250.0
50	92.8	110.2	127.2	143.8	159.9	175.8	206.3	235.2	262.5
52	96.7	114.8	132.6	150.0	167.0	183.6	215.6	246.1	275.0
54	100.6	119.5	138.1	156.3	174.0	191.4	225.0	257.0	287.5
56	104.5	124.2	143.6	162.5	181.0	199.2	234.4	268.0	300.0
58	108.4	128.9	149.0	168.8	188.1	207.0	243.8	278.9	312.5
60	112.3	133.6	154.5	175.0	195.1	214.9	253.2	289.8	325.0
62	116.2	138.3	160.0	181.3	202.1	222.7	262.5	300.8	337.5
64	120.1	143.0	165.4	187.5	209.2	230.5	271.9	311.7	350.0
66	124.0	147.7	170.9	193.8	216.2	238.3	281.3	322.7	362.5
68	127.9	152.3	176.4	200.0	223.2	246.1	290.6	333.6	375.0
70	131.8	157.0	181.8	206.3	230.3	253.9	300.0	344.5	387.5
72	135.7	161.7	187.3	212.5	237.3	261.7	309.4	355.5	400.0
74	139.6	166.4	192.8	218.8	244.3	269.5	318.8	366.4	412.5
76	143.5	171.1	198.3	225.0	251.3	277.3	328.1	377.3	425.0
78	147.4	175.8	203.7	231.3	258.4	285.2	337.5	388.3	437.5
80	151.3	180.5	209.2	237.5	265.4	293.0	346.9	399.2	450.0

Weight of Round Cast Iron Plates,

ONE INCH THICK.

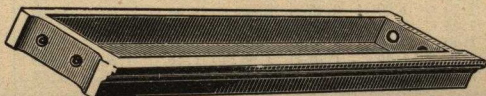
Diameter in Inches.	Weight. Pounds.	Diameter in Inches.	Weight. Pounds.	Diameter in Inches.	Weight. Pounds.	Diameter in Inches.	Weight. Pounds.
1	.20	23	109.25	59	719.04	103	2191.3
1½	.46	23½	114.06	60	743.60	104	2233.9
2	.82	24	118.95	61	768.61	105	2277.3
2½	1.29	24½	123.97	62	794.02	106	2320.7
3	1.85	25	129.08	63	819.82	107	2368.5
3½	2.53	25½	134.31	64	846.07	108	2409.0
4	3.28	26	139.62	65	872.71	109	2454.0
4½	4.18	26½	145.04	66	899.77	110	2499.2
5	5.15	27	150.56	67	927.10	111	2544.7
5½	6.24	27½	156.19	68	955.13	112	2591.0
6	7.41	28	161.92	69	983.43	113	2637.
6½	8.70	28½	167.76	70	1012.15	114	2684.
7	10.09	29	173.71	71	1041.26	115	2731.
7½	11.60	29½	179.73	72	1070.80	116	2779.
8	13.20	30	185.88	73	1100.76	117	2827.
8½	14.91	30½	192.14	74	1131.11	118	2875.
9	16.72	31	198.48	75	1161.90	119	2925.
9½	18.62	32	211.50	76	1193.09	120	2974.
10	20.64	33	224.94	77	1224.68	121	3024.
10½	22.74	34	238.77	78	1256.69	122	3074.
11	24.98	35	253.03	79	1289.12	123	3124.
11½	27.29	36	267.70	80	1321.96	124	3175.
12	29.74	37	282.77	81	1355.23	125	3227.
12½	32.27	38	298.24	82	1388.90	126	3279.
13	34.90	39	314.17	83	1422.98	127	3331.
13½	37.63	40	330.48	84	1457.46	128	3384.
14	40.47	41	347.21	85	1492.39	129	3437.
14½	43.42	42	364.36	86	1527.71	130	3490.
15	46.47	43	381.92	87	1563.42	131	3544.
15½	49.60	44	399.89	88	1599.59	132	3598.
16	52.86	45	418.27	89	1636.14	133	3653.
16½	56.22	46	437.07	90	1673.12	134	3719.
17	59.67	47	456.27	91	1710.49	135	3764.
17½	63.25	48	475.92	92	1748.31	136	3820.
18	66.90	49	495.93	93	1786.53	137	3876.
18½	70.69	50	516.40	94	1825.14	138	3933.
19	74.56	51	537.25	95	1864.19	139	3990.
19½	78.53	52	558.53	96	1903.64	140	4048.
20	82.60	53	580.23	97	1943.51	141	4106.
20½	86.79	54	602.32	98	1983.78	142	4164.
21	91.07	55	624.83	99	2024.49	143	4223.
21½	95.46	56	647.76	100	2065.67	144	4283.
22	99.96	57	671.12	101	2107.1	.....	.....
22½	104.56	58	694.87	102	2148.9	.....	.....

CAST IRON LINTELS.



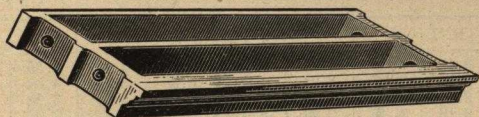
Lintel for 12 and 16 inch Wall.

FIG. 1.



Lintel with Moulded Face for 12 and 16 inch Wall.

FIG. 2.



Lintel with Moulded Face for 20 and 24 inch Wall.

FIG. 3.



T Lintel.

FIG. 4.



L Lintel.

FIG. 5.

NOTE.--In ordering Lintels give width of same, also length and height of Ribs and thickness of metal.

THE FOLLOWING TABLE GIVES THE SAFE LOAD EQUALLY DISTRIBUTED FOR CAST IRON LINTELS.

In tons of 2,000 lbs. Factor of Safety 8.

Distance between supports in ft.								
	5/8"	3/4"	1"	1 1/4"	5/8"	3/4"	1"	1 1/4"
5	2.79	3.18	3.81	4.30	3.14	3.56	4.26	4.80
6	2.33	2.65	3.17	3.59	2.61	2.97	3.55	4.00
7	2.00	2.27	2.72	3.07	2.24	2.54	3.04	3.43
8	1.74	1.99	2.38	2.69	1.96	2.22	2.66	3.00
9	1.55	1.77	2.11	2.39	1.74	1.98	2.36	2.67
10	1.40	1.59	1.90	2.15	1.57	1.78	2.13	2.40
11	1.27	1.45	1.73	1.95	1.43	1.62	1.93	2.18
12	1.16	1.33	1.59	1.79	1.31	1.48	1.77	2.00

Distance between supports in ft.								
	5/8"	3/4"	1"	1 1/4"	5/8"	3/4"	1"	1 1/4"
5	3.48	3.93	4.69	5.28	3.96	4.52	5.50	6.29
6	2.90	3.27	3.91	4.40	3.30	3.77	4.58	5.24
7	2.49	2.81	3.35	3.77	2.83	3.23	3.93	4.49
8	2.18	2.46	2.93	3.30	2.47	2.83	3.44	3.93
9	1.94	2.18	2.60	2.93	2.20	2.51	3.05	3.49
10	1.74	1.96	2.34	2.64	1.98	2.26	2.75	3.14
11	1.58	1.79	2.13	2.40	1.80	2.05	2.50	2.86
12	1.45	1.64	1.95	2.20	1.65	1.88	2.29	2.62

Distance between supports in ft.								
	5/8"	3/4"	1"	1 1/4"	5/8"	3/4"	1"	1 1/4"
5	4.38	5.00	6.07	6.96	5.32	6.12	7.52	8.68
6	3.65	4.17	5.06	5.80	4.43	5.10	6.26	7.23
7	3.13	3.57	4.33	4.97	3.80	4.37	5.37	6.20
8	2.74	3.13	3.79	4.35	3.33	3.83	4.70	5.43
9	2.43	2.78	3.37	3.86	2.96	3.40	4.18	4.82
10	2.19	2.50	3.03	3.48	2.66	3.06	3.76	4.34
11	1.99	2.21	2.76	3.16	2.42	2.78	3.42	3.95
12	1.83	2.08	2.53	2.90	2.22	2.55	3.13	3.67

If the load comes in centre of lintel, ONLY ONE-HALF of these loads should be placed on the lintels. Allowed fibre strain per square inch 3000 lbs.

THE FOLLOWING TABLE GIVES THE SAFE LOAD EQUALLY DISTRIBUTED FOR CAST IRON LINTELS.

In tons of 2,000 lbs. Factor of Safety 8.

Distance between supports in ft.								
	5/8"	3/4"	1"	1 1/4"	5/8"	3/4"	1"	1 1/4"
5	6.32	7.30	9.04	10.52	4.74	5.30	6.32	6.96
6	5.26	6.08	7.54	8.77	3.95	4.41	5.27	5.80
7	4.51	5.21	6.46	7.52	3.39	3.78	4.52	4.97
8	3.95	4.56	5.65	6.58	2.96	3.31	3.85	4.35
9	3.51	4.05	5.02	5.85	2.63	2.94	3.51	3.87
10	3.16	3.65	4.52	5.26	2.37	2.65	3.16	3.48
11	2.87	3.32	4.11	4.78	2.16	2.41	2.87	3.17
12	2.63	3.04	3.77	4.39	1.98	2.21	2.63	2.90

Distance between supports in ft.								
	5/8"	3/4"	1"	1 1/4"	5/8"	3/4"	1"	1 1/4"
5	4.22	4.68	5.67	6.43	5.65	6.35	7.51	8.61
6	3.54	3.90	4.72	5.36	4.71	5.29	6.26	7.18
7	3.03	3.35	4.05	4.59	4.03	4.53	5.36	6.14
8	2.65	2.93	3.54	4.02	3.53	3.97	4.69	5.38
9	2.36	2.60	3.15	3.58	3.14	3.52	4.17	4.87
10	2.12	2.34	2.84	3.22	2.82	3.17	3.76	4.30
11	1.93	2.13	2.58	2.92	2.57	2.89	3.42	3.92
12	1.77	1.95	2.36	2.68	2.35	2.64	3.13	3.59

Distance between supports in ft.								
	5/8"	3/4"	1"	1 1/4"	5/8"	3/4"	1"	1 1/4"
5	6.27	7.11	8.40	9.60	6.93	7.83	9.37	10.57
6	5.23	5.92	7.00	8.00	5.78	6.52	7.81	8.81
7	4.48	5.08	6.00	6.86	4.95	5.59	6.69	7.55
8	3.92	4.44	5.25	6.00	4.33	4.89	5.86	6.61
9	3.49	3.95	4.67	5.33	3.85	4.35	5.20	5.88
10	3.14	3.55	4.20	4.80	3.47	3.91	4.68	5.29
11	2.85	3.23	3.82	4.36	3.15	3.56	4.26	4.81
12	2.61	2.96	3.50	4.00	2.89	3.26	3.90	4.41

If the load comes in centre of lintel, ONLY ONE-HALF of these loads should be placed on the lintels. Allowed fibre strain per square inch 3000 lbs.

THE FOLLOWING TABLE GIVES THE SAFE LOAD EQUALLY DISTRIBUTED FOR CAST IRON LINTELS.

In tons of 2,000 lbs. Factor of Safety 8.

Distance between supports in ft.	 LINTEL. 8" deep. 12" wide.				 LINTEL. 8" deep. 14" wide.			
	5/8"	3/4"	1"	1 1/4"	5/8"	3/4"	1"	1 1/4"
5	8.59	9.90	12.17	13.98	9.65	11.09	13.63	15.76
6	7.16	8.25	10.15	11.65	8.04	9.24	11.35	13.13
7	6.14	7.07	8.70	9.99	6.89	7.92	9.73	11.26
8	5.37	6.19	7.61	8.74	6.03	6.93	8.52	9.85
9	4.77	5.50	6.76	7.77	5.36	6.16	7.57	8.76
10	4.30	4.95	6.09	6.99	4.82	5.54	6.81	7.88
11	3.91	4.50	5.53	6.35	4.39	5.04	6.19	7.16
12	3.58	4.13	5.07	5.82	4.02	4.62	5.68	6.57

Distance between supports in ft.	 LINTEL. 8" deep. 16" wide.				 LINTEL. 8" deep. 20" wide.			
	5/8"	3/4"	1"	1 1/4"	5/8"	3/4"	1"	1 1/4"
5	10.66	12.29	14.93	17.36	12.65	14.52	17.75	19.81
6	8.83	10.24	12.44	14.47	10.54	12.10	14.80	16.51
7	7.62	8.78	10.66	12.40	9.03	10.37	12.68	14.15
8	6.66	7.68	9.33	10.85	7.90	9.08	11.10	12.38
9	5.92	6.83	8.29	9.65	7.03	8.07	9.86	11.00
10	5.33	6.14	7.46	8.68	6.32	7.26	8.88	9.90
11	4.85	5.59	6.78	7.89	5.75	6.60	8.07	9.00
12	4.44	5.12	6.22	7.24	5.27	6.05	7.40	8.25

Distance between supports in ft.	 LINTEL. 6" deep. 16" wide.				 LINTEL. 8" deep. 16" wide.			
	3/4"	1"	1 1/4"	1 5/8"	3/4"	1"	1 1/4"	1 1/2"
5	8.67	10.48	11.86	12.95	13.62	16.78	19.40	21.61
6	7.22	8.73	9.89	10.80	11.35	13.98	16.17	18.01
7	6.19	7.48	8.47	9.25	9.73	11.99	13.86	15.44
8	5.42	6.55	7.41	8.10	8.51	10.49	12.13	13.51
9	4.82	5.82	6.59	7.20	7.57	9.32	10.78	12.01
10	4.33	5.24	5.93	6.48	6.81	8.39	9.70	10.81
11	3.94	4.76	5.39	5.89	6.19	7.63	8.22	9.82
12	3.61	4.37	4.94	5.40	5.67	6.99	8.09	9.00

If the load comes in centre of lintel, ONLY ONE-HALF of these loads should be placed on the lintels. Allowed fibre strain per square inch, 3000 lbs.

THE FOLLOWING TABLE GIVES THE SAFE LOAD EQUALLY DISTRIBUTED FOR CAST IRON LINTELS.

In tons of 2,000 lbs. Factor of Safety 8.

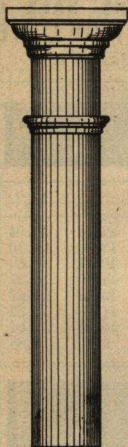
Distance between supports in ft.	 LINTEL. 8" deep. 20" wide.				 LINTEL. 8" deep. 24" wide			
	¾"	1"	1¼"	1½"	¾"	1"	1¼"	1½"
5	16.13	19.74	22.77	25.36	18.38	22.56	26.04	28.94
6	13.36	16.45	18.98	21.14	15.32	18.80	21.70	24.12
7	11.45	14.10	16.29	18.12	13.13	16.11	18.60	20.67
8	10.02	12.34	14.23	15.85	11.49	14.10	16.27	18.09
9	8.91	10.97	12.65	14.09	10.21	12.53	14.47	16.08
10	8.02	9.87	11.39	12.68	9.19	11.28	13.02	14.47
11	7.29	8.97	10.35	11.53	8.35	10.25	11.84	13.15
12	6.68	8.22	9.49	10.57	7.66	9.40	10.85	12.06

Distance between supports in ft.	 LINTEL. 10" deep. 20" wide.				 LINTEL. 10" deep. 24" wide			
	¾"	1"	1¼"	1½"	¾"	1"	1¼"	1½"
5	22.40	27.94	32.69	37.01	25.56	31.90	36.72	42.09
6	18.66	23.28	27.24	30.84	21.30	26.58	30.60	35.07
7	16.00	19.96	23.35	26.44	18.30	22.97	26.23	30.06
8	14.00	17.46	20.43	23.13	15.98	19.94	22.95	26.30
9	12.44	15.52	18.18	20.56	14.20	17.72	20.40	23.38
10	11.20	13.97	16.35	18.51	12.78	15.95	18.36	21.04
11	10.18	12.70	14.86	16.82	11.62	14.50	16.69	19.13
12	9.50	11.64	13.62	15.42	10.65	13.29	15.30	17.54

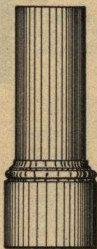
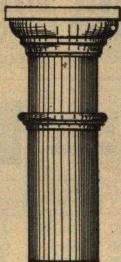
Distance between supports in ft.	 LINTEL. 12" deep. 20" wide.				 LINTEL. 12" deep. 24" wide			
	¾"	1"	1¼"	1½"	¾"	1"	1¼"	1½"
5	29.35	36.96	43.76	49.79	33.32	41.85	49.53	56.63
6	24.46	30.80	36.46	41.49	27.77	34.88	41.28	47.19
7	20.96	26.40	31.25	35.56	23.80	29.90	35.38	40.45
8	18.34	23.10	27.35	31.12	20.83	26.16	30.96	35.39
9	16.31	20.53	24.31	27.66	18.51	23.25	27.52	31.46
10	14.67	18.48	21.88	24.89	16.66	20.93	24.77	28.31
11	13.34	16.80	19.89	22.63	15.15	19.02	22.51	25.74
12	12.23	15.40	18.23	20.75	13.89	17.44	20.64	23.60

If the load comes in centre of lintel, ONLY ONE-HALF of these loads should be placed on the lintels. Allowed fibre strain per square inch 3000 lbs.

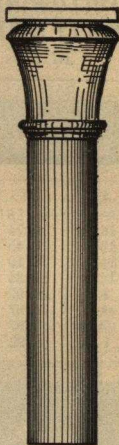
COLUMNS.



COLUMN 395
4, 5, 6, 7, 8, 9, 10, 11,
12, 13 and
14 in. Diam.

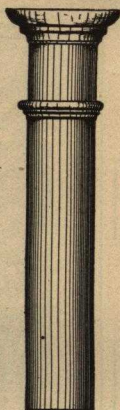


COLUMN 396
4, 5, 6, 7, 8, 9, 10, 11,
12, 13 and
14 in. Diam.

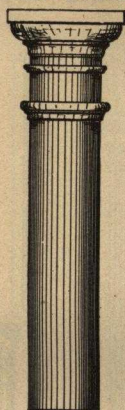


COLUMN U
5, 6, 7 and
8 in. Diam.

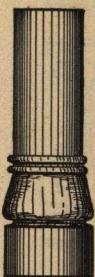
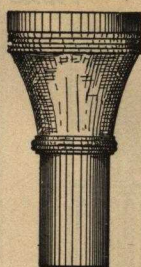
COLUMNS.



COLUMN P
4, 5, 6, 7, 8, 9, 10,
11, 12, 13 and
14 in. Diam.

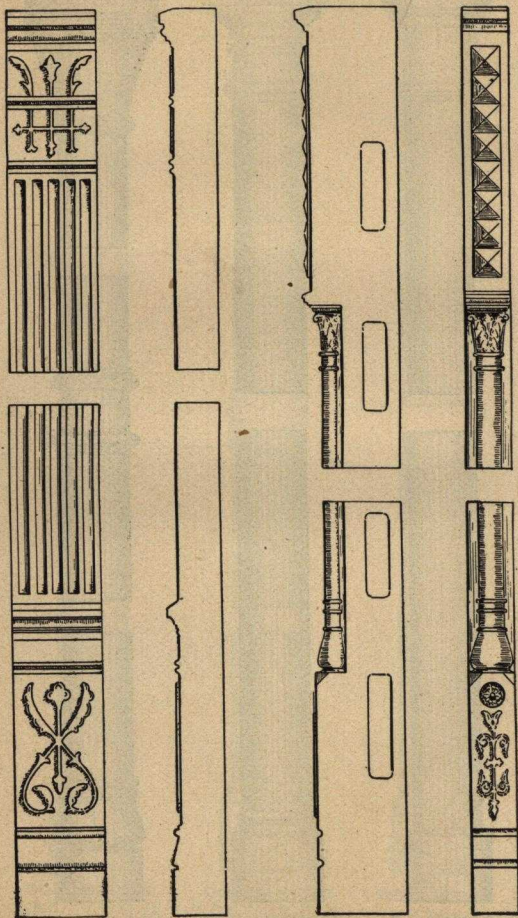


COLUMN 364
5, 6, 7, 8, 9, 10, 11,
12, 13 and
14 in. Diam.



COLUMN 55
5, 7, 8 and 10 in.
Diam.

PILASTER AND COLUMNS.



PILASTER A

4, 7, 8, 9, 10, 12, 14, 15, 16 in. Faces,

COLUMN B

6 in. Face x 8 in. Deep.
7½ " x 12 in. Deep.

COLUMNS AND PILASTERS.



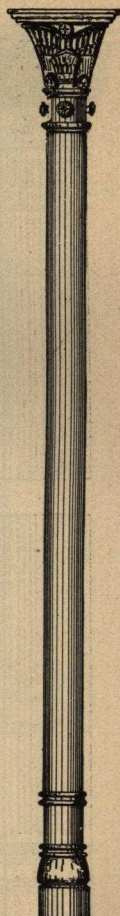
PILASTER C

4, 5, 6, 8, 10, 12, 14, 16,
21 in. Faces.



PILASTER D

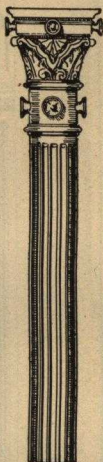
4, 5, 6, 8, 10, 12, 14, 16,
21 in. Faces.



COLUMN E

5, 6, 8 in.
Diam.

PILASTER FACES AND ROUND COLUMNS.

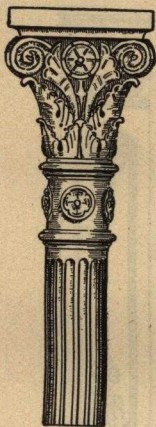


PILASTER H
5, 6, 8, 9, 10, 12, 14, 16,
18, 20 in. Faces.

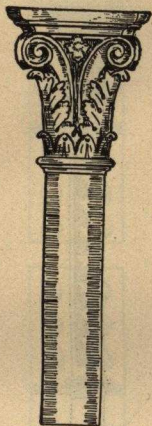
COLUMN J
5, 6, 7, 8 in.

PILASTER K
4, 6, 8, 12, 18 in. Faces

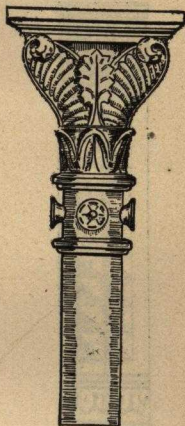
COLUMNS.



COLUMN M.
5, 6, 8 in. Diam.



COLUMN NO. 329.
5 in. Diam.



COLUMN NO. 34.
5 in. Diam.

COLUMNS, PILASTERS AND GAS PIPE
COLUMN.

NO. 49.
4, 5, 6, 8, 10, 12,
14 in. Faces.



NO. 53.
2, 2½, 3 in.
Diam. Gas Pipe.

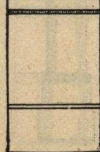
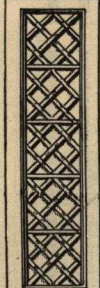
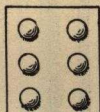


NO. 64.
6, 8, 9, 10, 12, 14,
16 in. Faces.

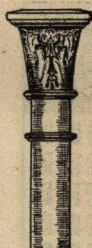
COLUMNS AND PILASTERS.



NO. 51.
6, 17, 18 in Faces.

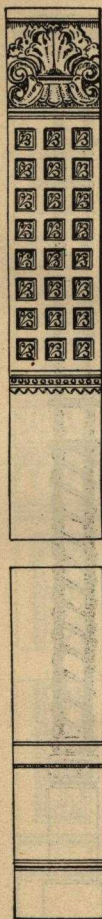


NO. 392.
12 in. Faces.



NO. 393.
5 in. Diam.

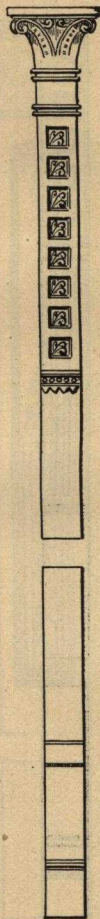
COLUMNS AND PILASTERS.



NO. 354
9 and 12 in. Face.



NO. 360
5 in. Diameter.

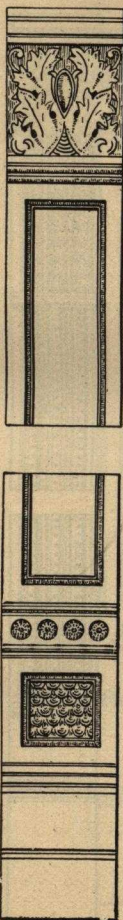


NO. 338
6 3/8 in. Face.

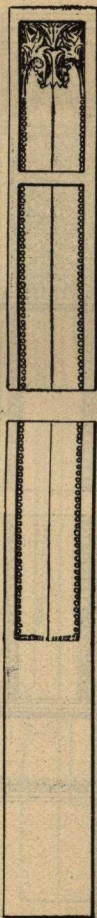
COLUMNS AND PILASTERS.



NO. 394.
12 in. Face.

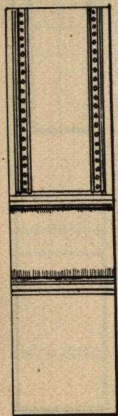


NO. 346.
12 in. Face.

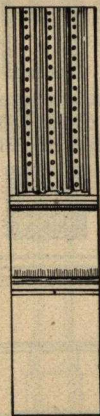
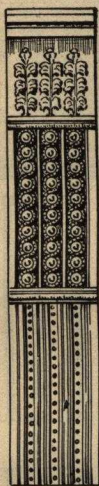


NO. 84.
18 in. Face.

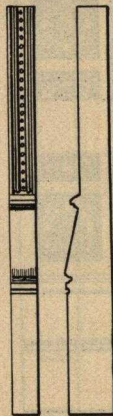
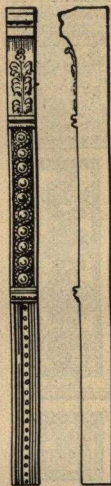
COLUMNS AND PILASTERS.



NO. 117.
17 in. Face.

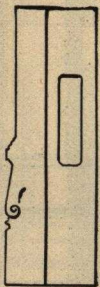
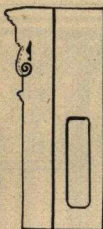


NO. 118.
6, 8, 12½ in. Faces.

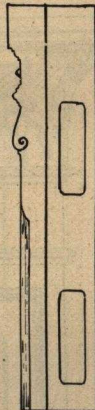
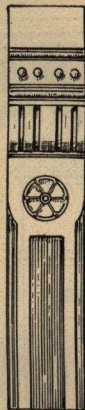


NO. 119.
4 in. Face.

MULLION COLUMNS.

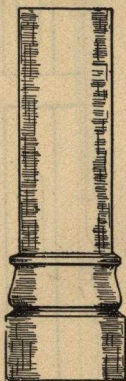
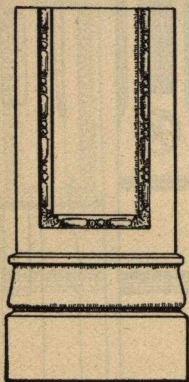
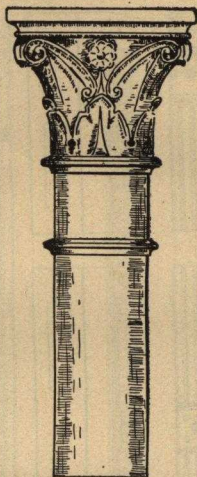
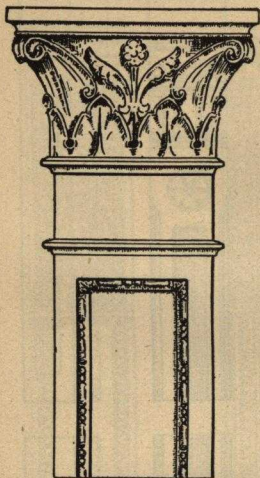


COLUMN X.
5, 6, 8 in. Faces



COLUMN 95.
10 in. Face.

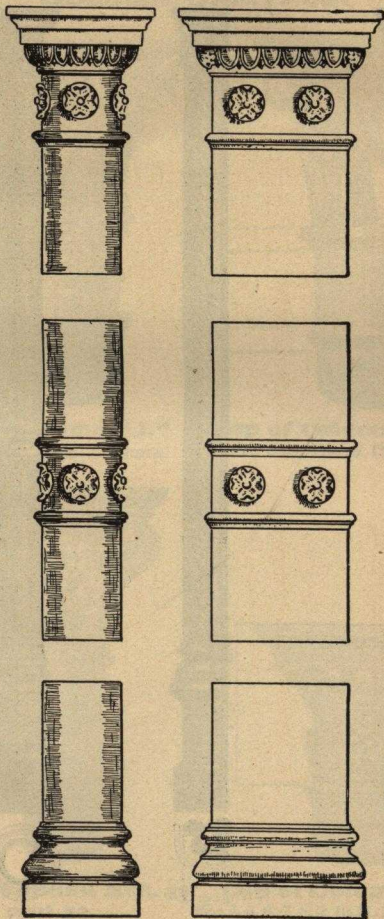
COLUMNS AND PILASTERS.



N^o. 390.
12 in. and 16 in. Face.

COLUMN R.
6 in. Diam.

COLUMNS AND PILASTERS.



COLUMN S.

4, 5, 6, 7, 8, 9, 10, 11, 12,
13, 14, 16 in. Diam.

NO. 391.

12 in. Face.
16 in. Face.

COLUMNS.



COLUMN 76
5, 6, 7, 8, 10 and
12 in. Diam.

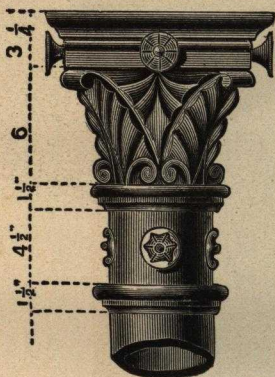


COLUMN O
5 and 5½ in.



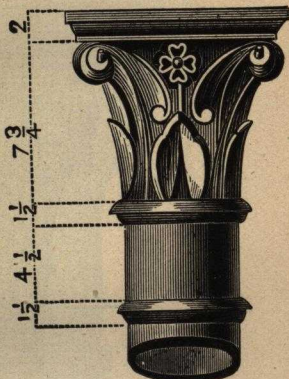
COLUMN 77
5, 6, 7, 8, 9, 10, 11
and 12 in. Diam.

COLUMN CAPITALS.



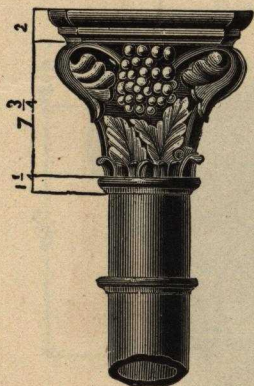
Cap of Column "J."

For 5-6-7-8 in. Diam. Columns.



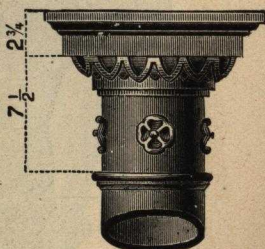
Cap of Column "R."

For 6 in. Diam. Column.



Cap of Column Nos. 32 and 33.

For 5 and 6 in. Diam. Columns.



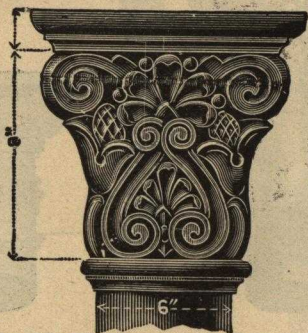
Cap of Column "S."

For 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 16 in. Diam. Columns.

COLUMN CAPITALS.

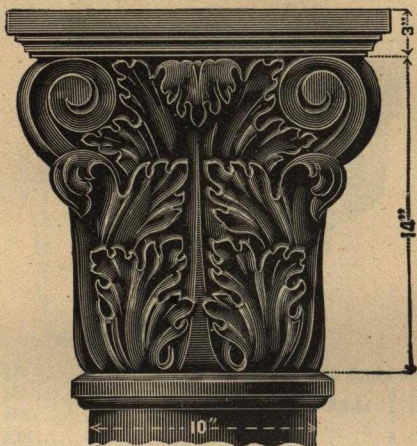
**Cap of Column No. 329.**

5 in. Diam.

**Cap of Column No. 335.**

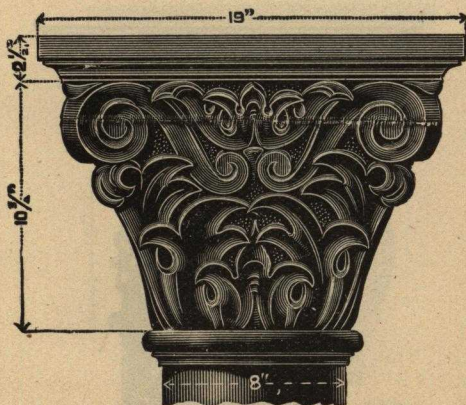
6 in. Diam.

COLUMN CAPITALS.



Cap of Column No. 332.

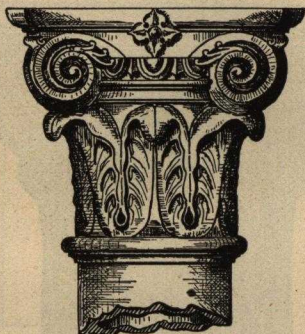
10 in. Diam.



Cap of Column No. 333.

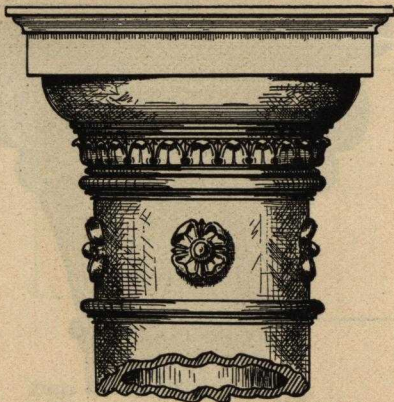
8 in. Diam.

COLUMN CAPITAL NO. 400.



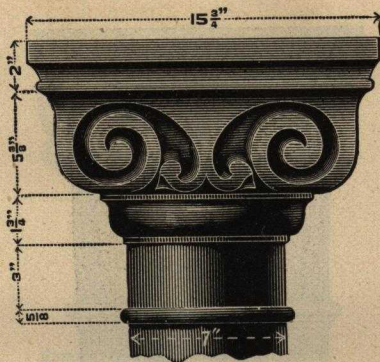
Pattern for 5 inch diameter column.....	7 $\frac{3}{4}$	in. high
“ “ 6 “ “ “ “ “ “	7 $\frac{3}{4}$	“ “
“ “ 7 “ “ “ “ “ “	10 $\frac{1}{4}$	“ “
“ “ 8 “ “ “ “ “ “	10 $\frac{1}{4}$	“ “

COLUMN CAPITAL NO. 407.

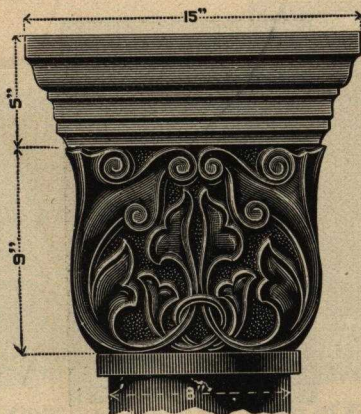


Pattern for 10 inch diameter column.

COLUMN CAPITALS.

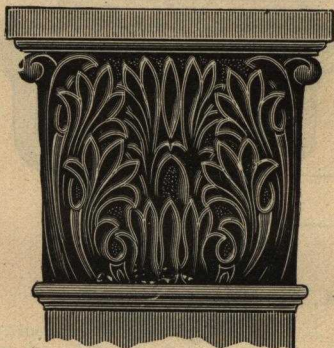


Cap of Column No. 334.
7 in. Diam.



Cap of Column No. 330.
8 in. Diam.

COLUMN CAPITALS.

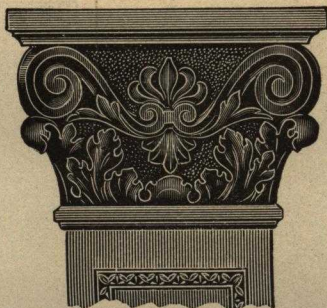


Cap of Column No. 343.
5 and 12 in. Face.



Cap of Column No. 346.
12 in. face.

COLUMN CAPITALS.



Cap of Column No. 352.
10 and 22 in. Face.



Cap of Column
No. 353.
10 in. Face.



Cap of Column
No. 342.
9 in. Face.

COLUMN CAPITALS.



No. 345.
7, 9, 10 and 13 in. Face.



No. 355.
8 in. Face.



No. 359.
5 in. Face.

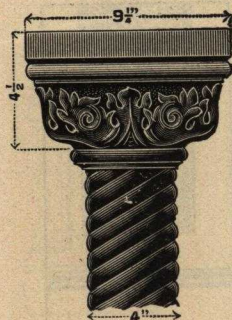


No. 354.
9 and 12 in. Face.

COLUMN CAPITALS.



Cap of Column No. 347.
12 in. Face.



Cap of Column
No. 328.
4 in. Diam.

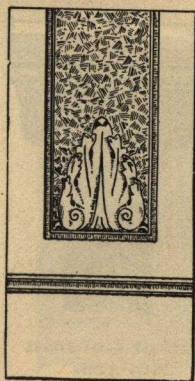
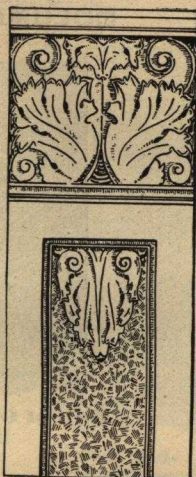


Cap of Column
No. 464.
6 in Face.

SASH COLUMN AND PILASTER.

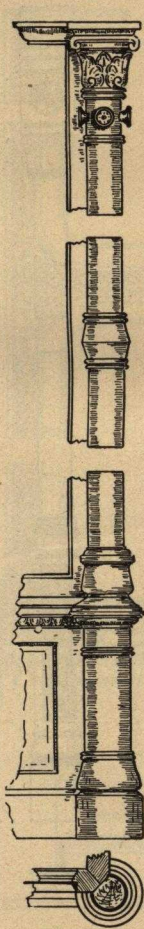


Style 403
8 in. Face.



NO. 345.
7, 8, 10, 13 in. Faces.

SASH AND MULLION COLUMNS.



STYLE L.

2½ and 3 in. Diam.

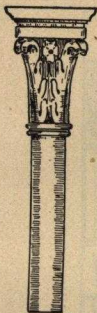


MULLION NO. 20.
8 in. Face.



MULLION NO. 27
9 in. Face.

SASH COLUMNS.



Style 38

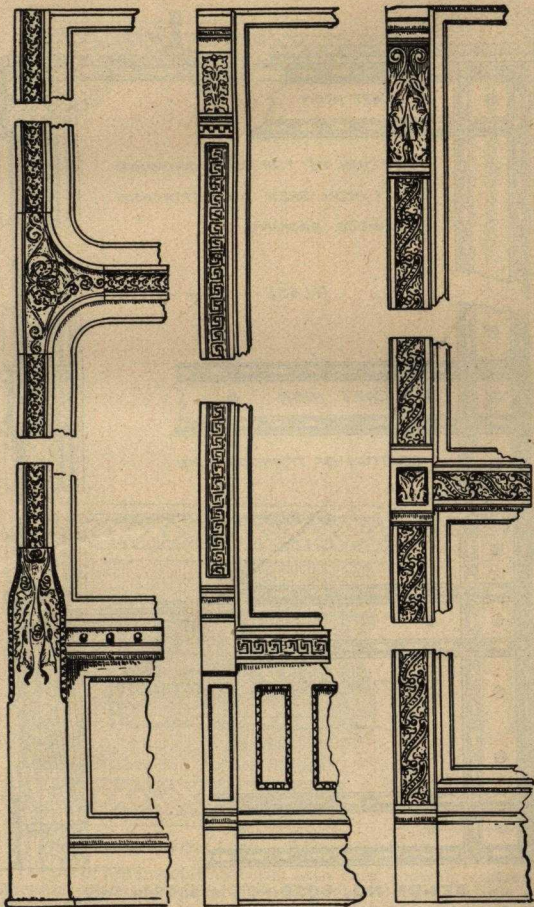
Style 40

Style 42

Style 44

2. 2½ 3 in. Diam. 2½ 3 in. Diam. 2½, 3 in. Face. 2½, 3 in. Face.

SASH COLUMNS.

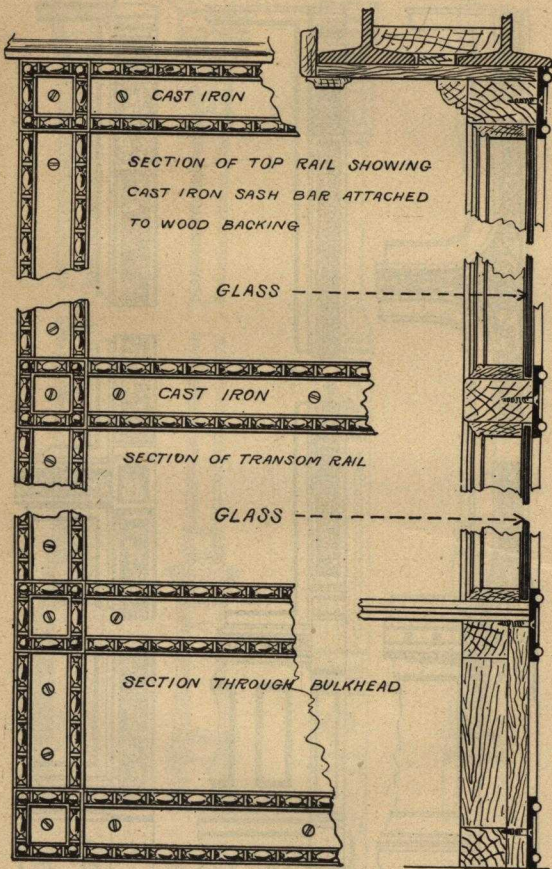


Style 400
2½ in. Face

Style 401
3 in. Face.

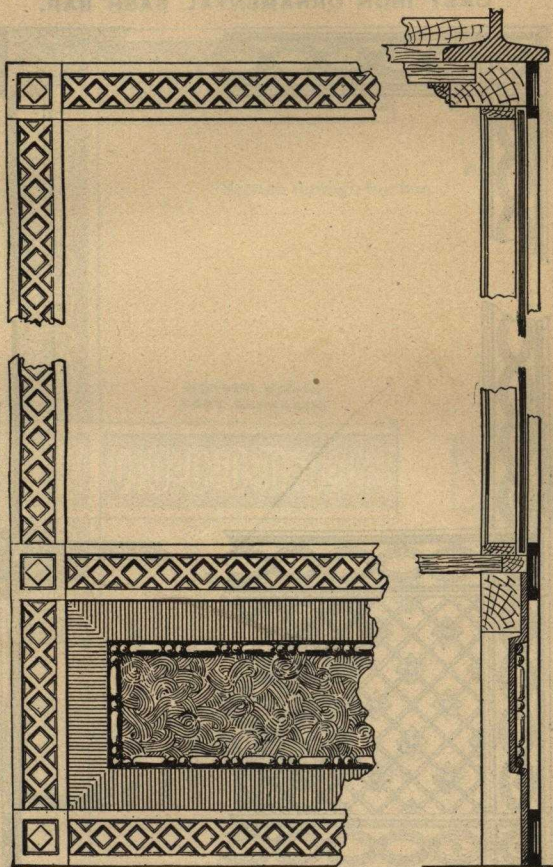
Style 402
3 in. Face.

CAST IRON ORNAMENTAL SASH BAR.

DESIGN NO. 6020.— $2\frac{3}{4}$ -in. and 3-in. Face.

* Details of ornamental cast iron sash bars, showing method of attaching ornamental iron to wood frame. In writing for prices send full particulars, with sketch.

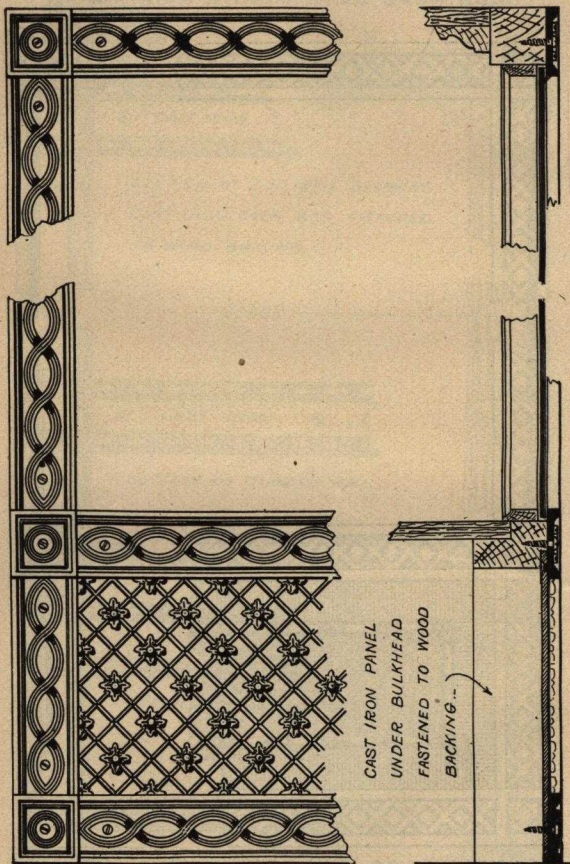
CAST IRON ORNAMENTAL SASH BAR.

DESIGN NO. 6C10.— $2\frac{1}{2}$ -in. and 3-in. Face.

Details of ornamental cast iron sash bars, showing method of attaching ornamental iron to wood frame. Parties desiring cast iron bulkhead panels, in connection with sash bar, will please send full particulars with all measurements required.

Prices quoted on application.

CAST IRON ORNAMENTAL SASH BAR.



DESIGN NO. 6030.—2-in. and 2½-in. Face.

Details of ornamental cast iron sash bars, showing method of attaching ornamental iron to wood frame. Parties desiring cast iron bulkhead panels, in connection with sash bar, will please send full particulars with all measurements required.

Prices quoted on application.



Section through top bar.

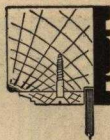


FIG. 1.



CORNER BLOCK
CAST SEPARATE.



Section through transom or
bulkhead bar.

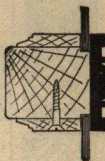


FIG. 2.

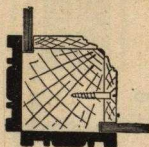
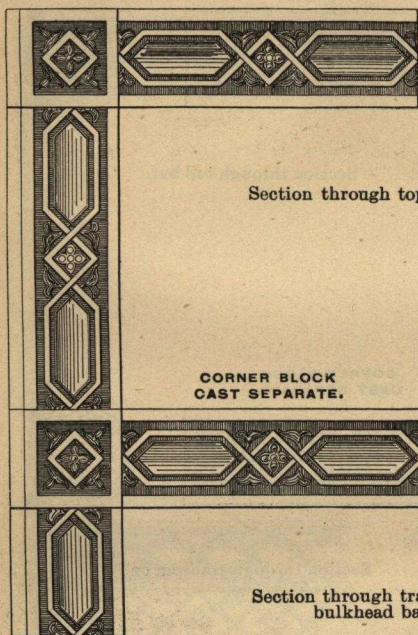


FIG. 3.

DESIGN No. 7000.
2", 2½" and 3" wide.

DETAILS OF ORNAMENTAL CAST IRON SASH BARS.

Showing method of setting plate glass from inside of building,
and method of attaching ornamental iron to wood frame..



Section through top bar.

CORNER BLOCK
CAST SEPARATE.Section through transom or
bulkhead bar.

FIG. 1.



FIG. 2.

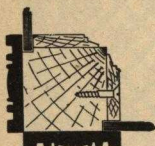


FIG. 3.

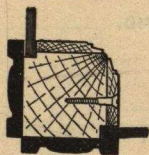
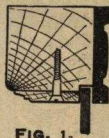
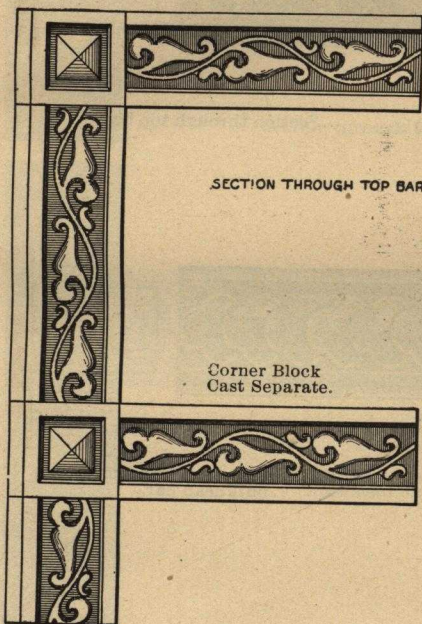
DESIGN No. 6000.

2", 2½", 3" and 4" face.

**DETAILS OF ORNAMENTAL CAST IRON
SASH BARS.**

Showing method of setting plate glass from inside of building
and method of attaching ornamental iron to wood frame.

CAST IRON ORNAMENTAL SASH BAR.



Section through transom
or bulkhead bar.

Cast iron
design No. 8000
2 in. wide.

Details of ornamental cast iron sash bars showing method of holding plate glass and attaching ornamental iron to wood frame.

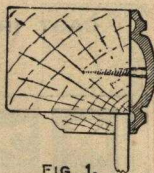
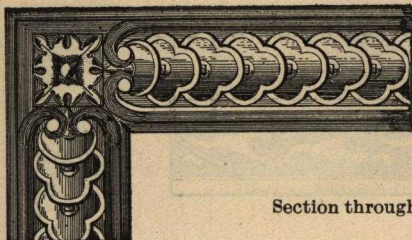


FIG. 1.

Section through top bar.

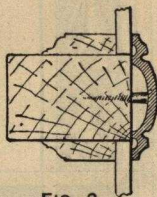


FIG. 2.

Section through transom or
bulkhead bar.

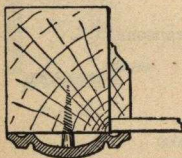


FIG. 3.

DESIGN NO. 4710.

$3\frac{3}{16}$ " wide.

DETAILS OF ORNAMENTAL STEEL SASH BARS.

Showing method of holding plate glass in position, and attaching ornamental iron to wood frame.

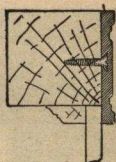
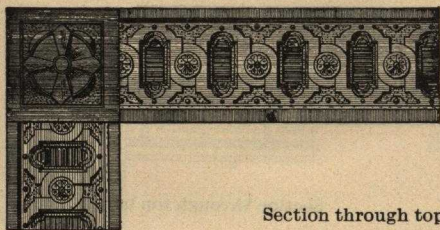


FIG. 1.

Section through top bar.

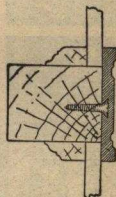
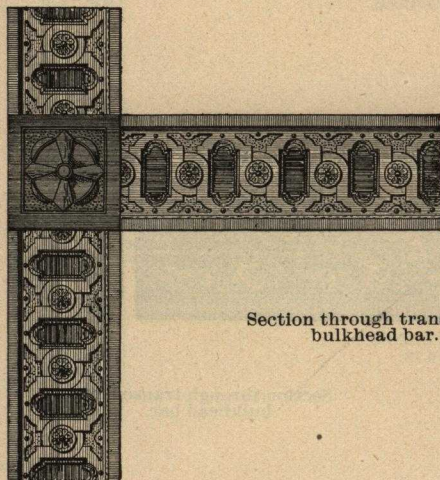


FIG. 2

Section through transom or
bulkhead bar.

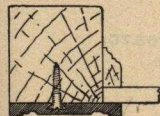


FIG. 3.

DESIGN NO. 4700.
3" wide.

DETAILS OF ORNAMENTAL STEEL SASH BARS.

Showing method of holding plate glass in position, and attaching ornamental iron to wood frame.

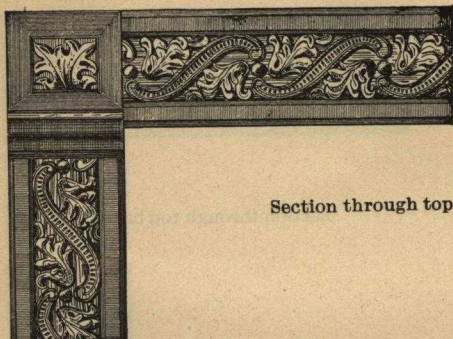


FIG. 1.

Section through top bar.

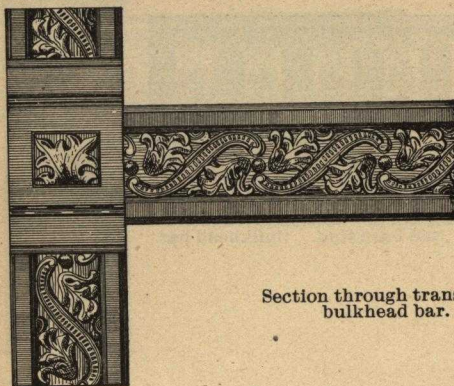


FIG. 2.

Section through transom or
bulkhead bar.

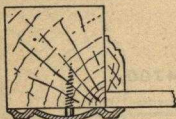


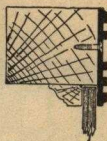
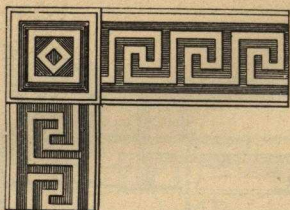
FIG. 3.

DESIGN NO. 6570.

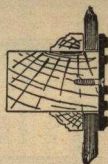
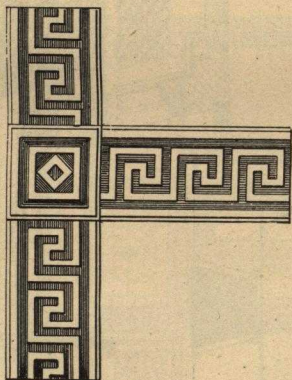
$3\frac{1}{8}$ " wide.

DETAILS OF ORNAMENTAL STEEL SASH BARS.

Showing method of holding plate glass in position, and attaching ornamental iron to wood frame.



Section through top bar.



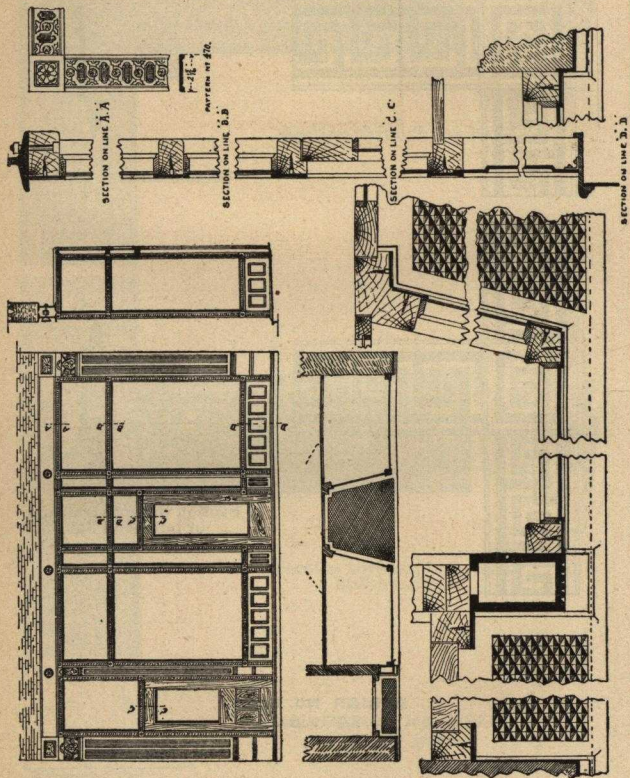
Section through transom
or bulkhead bar.

DESIGN No. 5000.
2 $\frac{9}{16}$ " wide.

DETAILS OF ORNAMENTAL STEEL SASH BARS.

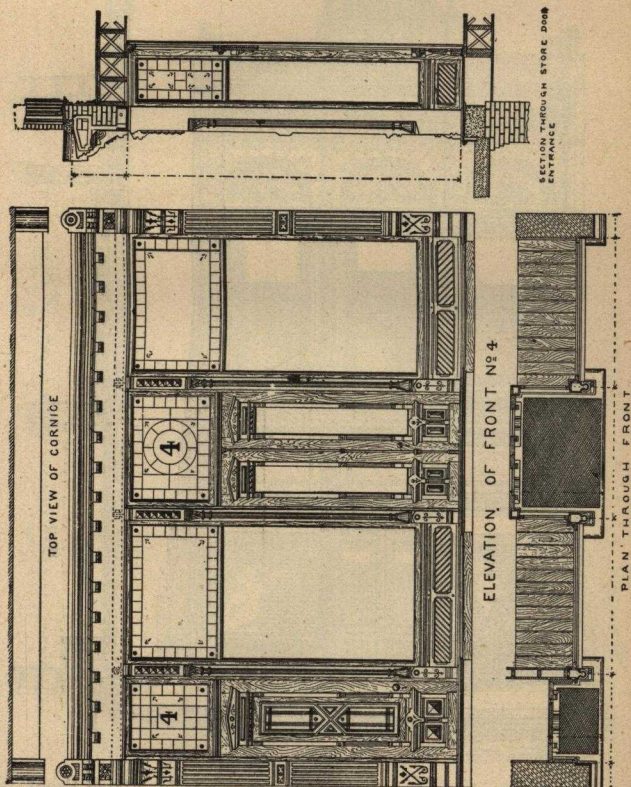
Showing method of holding plate glass in position, and attaching ornamental iron to wood frame.

ELEVATION AND DETAILS OF SASH FRONT.



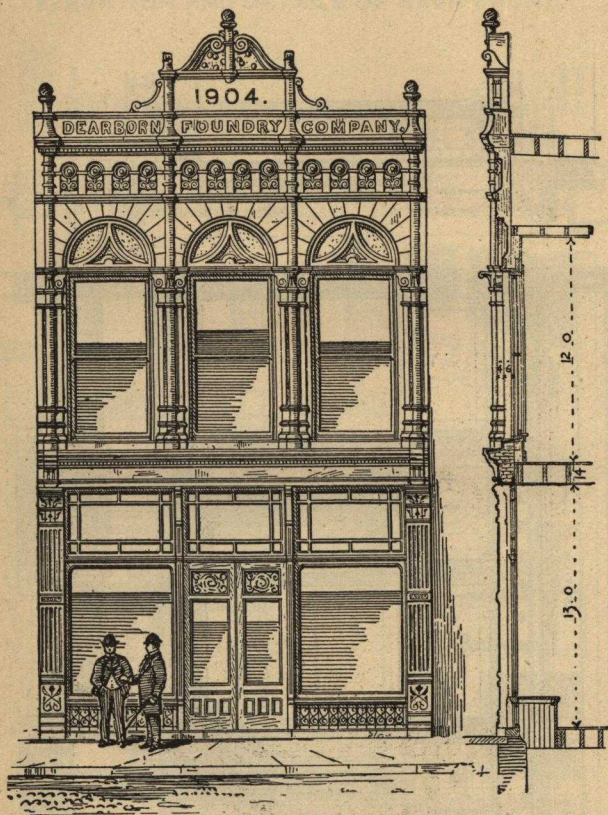
See pages 147 to 153 inclusive, for larger details of ornamental iron sash work. In ordering give necessary measurements to enable us to fill order promptly.

FRONT No. 4.



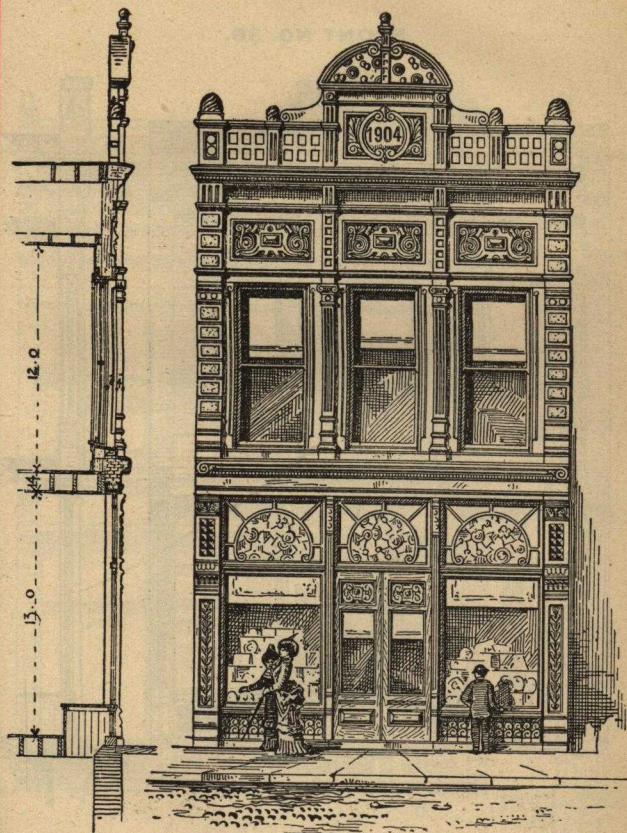
We are prepared to furnish Iron Work for above Front complete, including Cast Iron Columns, Pilasters, Sill Plates, Pier Plates, Risers and Cast Iron Lintels, or can furnish Steel Beams for Front Lintel or Girder, as we carry a very large stock.

FRONT NO. 12.



We are prepared to furnish Iron Work for above Front complete, including Cast Iron Columns, Pilasters, Sill Plates, Pier Plates, Risers and Cast Iron Lintels, or can furnish Steel Beams for Front Lintel or Girder, as we carry a very large stock.

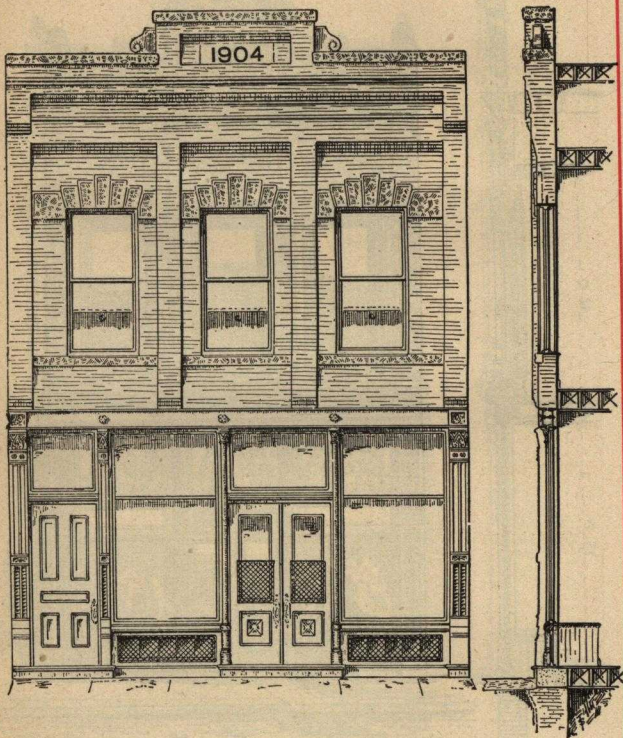
FRONT NO. 11.



We are prepared to furnish Iron Work for the above Front complete, including Cast Iron Columns, Pilasters, Sill Plates, Pier Plates, Risers and Cast Iron Lintels.

Estimates will be given on any of this work promptly.

FRONT NO. 36.



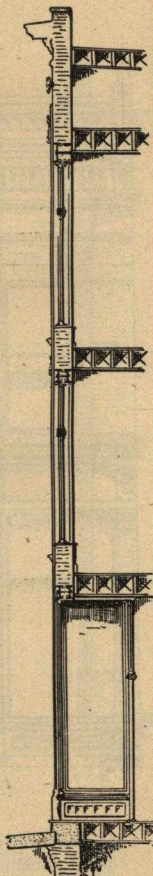
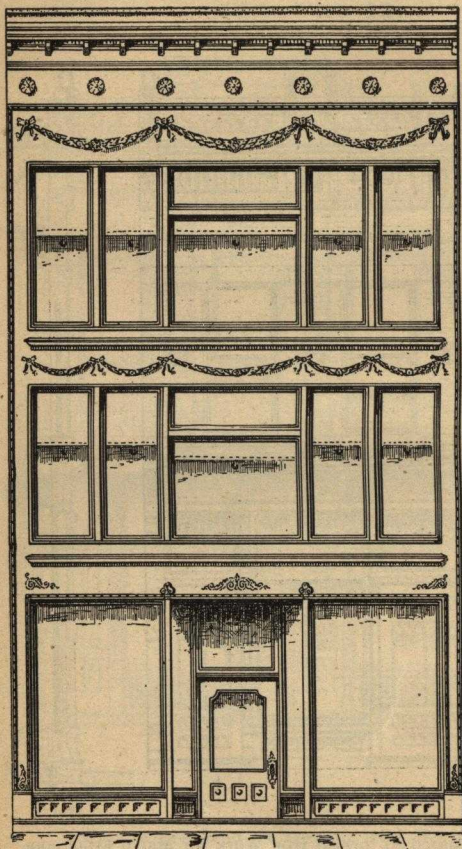
We are prepared to furnish Iron Work for the above Front complete, including Cast Iron Columns, Pilasters, Gas Pipe Columns, Sill Plates, Pier Plates, Risers and Steel Girder.

FRONT No. 39.



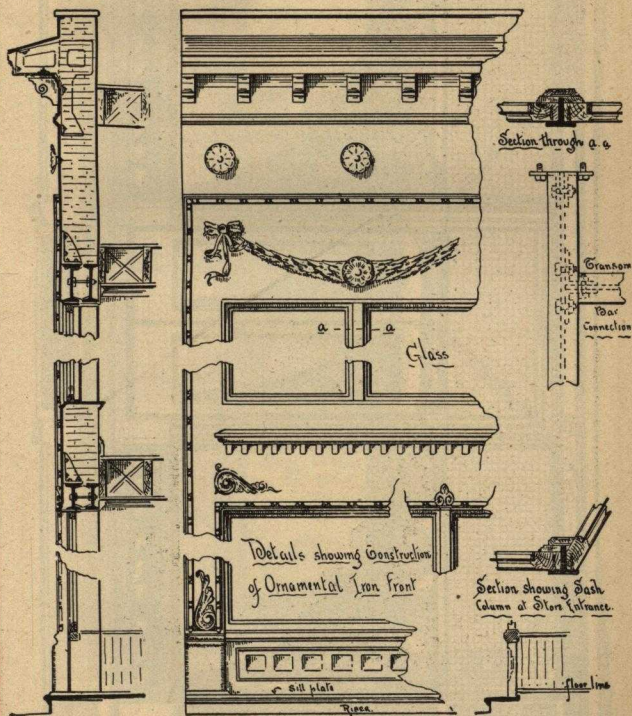
We are prepared to furnish Iron Work for above Front complete, including Cast Iron Columns, Pilasters, Sill Plates, Pier Plates, Risers and Cast Iron Lintels, or can furnish Steel Beams for Front Lintel or Girder, as we carry a very large stock.

FRONT No. 43.

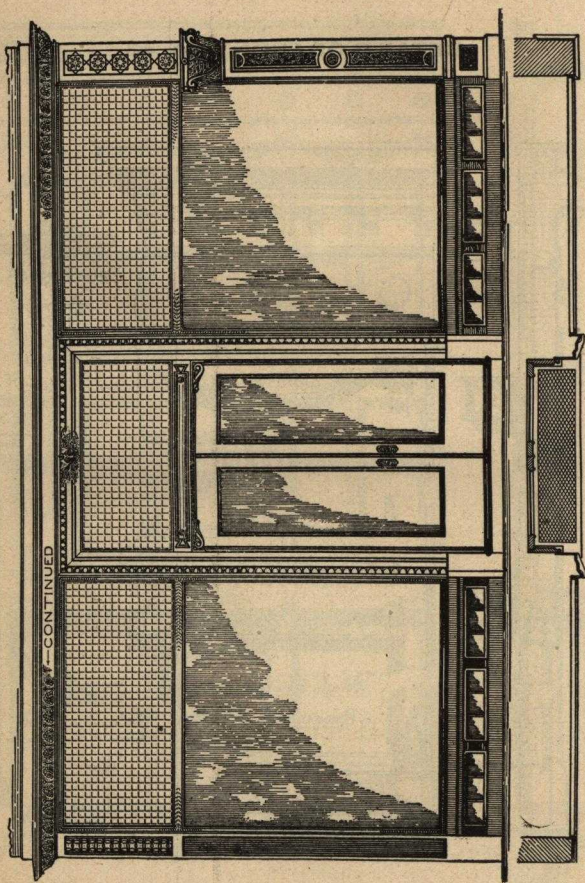


ESTIMATES FURNISHED PROMPTLY ON RECEIPT OF
FULL INFORMATION.

DETAILS OF FRONT No. 43.

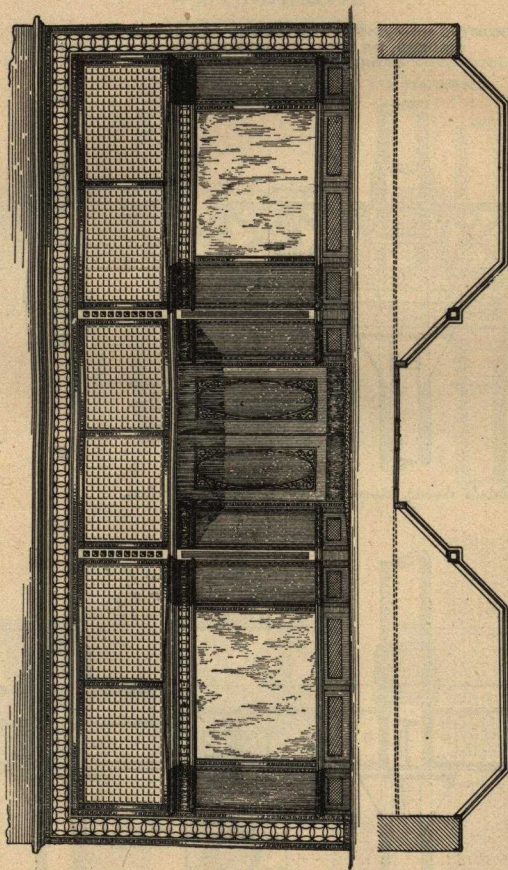


ORNAMENTAL IRON FRONT.



We are prepared to quote prices on Ornamental Fronts, as shown, upon receipt of necessary information, filling all orders with dispatch and neatness.

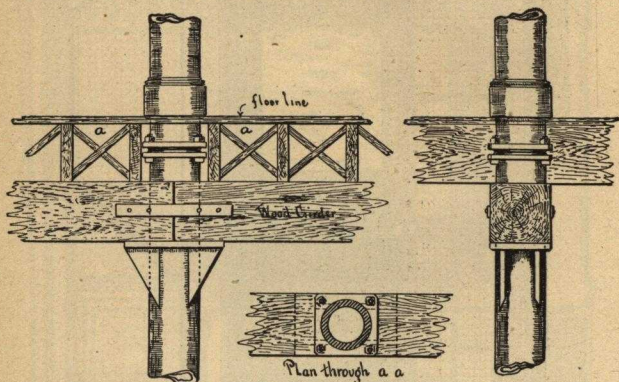
ORNAMENTAL IRON FRONT.



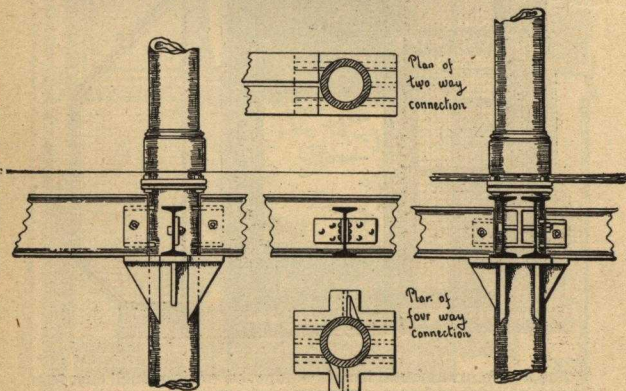
The above ornamental iron is composed of light shell cast iron pilaster at sides of fronts, and cornice above, of same design, with ornamental cast iron sash bars. The whole front supported on steel beams, carried upon cast iron columns. We are prepared to make estimates, and upon receipt of full information, can furnish material for this class of work promptly. Painted one coat of paint.

INTERIOR VIEW

SHOWING HOW JOISTS AND FLOORS ARE SUPPORTED BY WOOD GIRDERS, OR STEEL CONSTRUCTION, SAME BEING CARRIED BY CAST IRON COLUMNS.



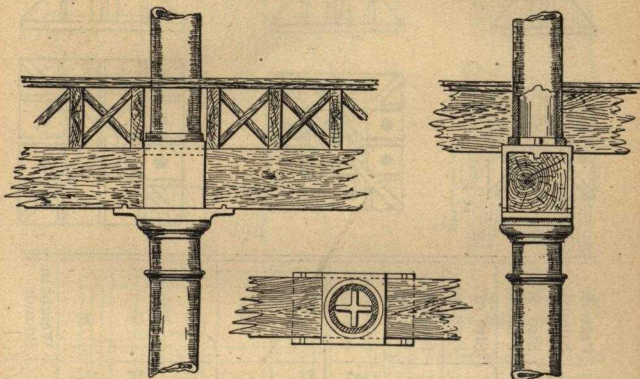
Details showing Column connection for Wood Construction.



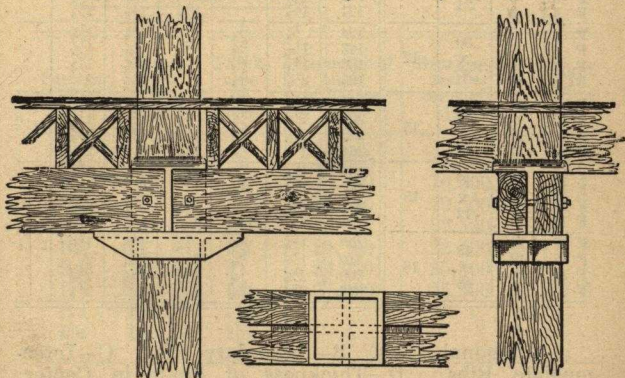
Details showing Beams & Flange Connections for Iron Construction

INTERIOR VIEW

SHOWING METHOD OF WOOD GIRDERS AND JOISTS, SUPPORTED BY
EITHER WOOD OR CAST IRON COLUMNS, AS REQUIRED.



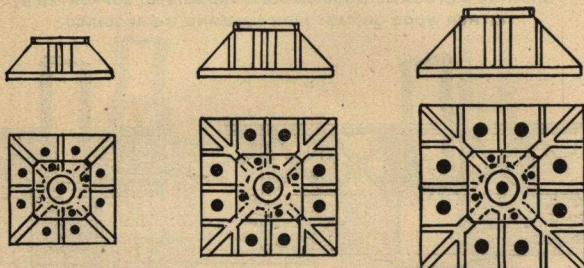
Detail of Stool and Plate for Wood Girder



Detail of Quill and Corbel for Wood Columns.

FIG. 231.

STANDARD CAST IRON FOOTINGS FOR CAST IRON COLUMNS

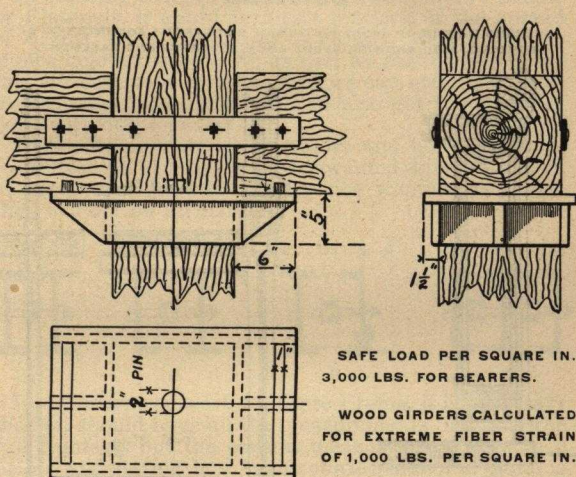


Pattern Number	Size of Column	Size of Footing	Depth of Footing	Safe load in Tons	A	B	C	D	E	Weight in Pounds
F 1	6	24	9	87	$\frac{7}{8}$		$\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	
F 2	7	x		95	$\frac{7}{8}$		$\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	
F 3	8	x		100	$1\frac{1}{4}$		$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{4}$	
F 4	9	24		121	$1\frac{1}{2}$		$1\frac{3}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	
F 5	7	30	12	124	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$	
F 6	8	x		143	$1\frac{1}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	
F 7	9	30		166	$1\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{2}$	$1\frac{3}{4}$	
F 8	10	30		185	$2\frac{1}{4}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2	
F 9	8	36	15	169	$1\frac{1}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{4}$	$1\frac{1}{4}$	
F 10	9	x		200	$1\frac{3}{4}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$	
F 11	10	36		232	$2\frac{3}{8}$	$\frac{3}{4}$	$1\frac{1}{8}$	$1\frac{3}{4}$	$1\frac{3}{4}$	
F 12	11	36		264	3	$\frac{7}{8}$	$1\frac{5}{8}$	2	2	
F 13	10	42	15	194	$1\frac{1}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$	
F 14	11	x		237	$1\frac{7}{8}$	$\frac{3}{4}$	1	2	2	
F 15	12	42		262	$2\frac{5}{8}$	$\frac{7}{8}$	$1\frac{3}{8}$	$2\frac{1}{4}$	$2\frac{1}{4}$	
F 16	13	42		288	$3\frac{1}{4}$	$1\frac{1}{8}$	$1\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{1}{2}$	
F 17	11	48	18	250	$1\frac{1}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{2}$	$1\frac{1}{2}$	
F 18	12	x		310	$1\frac{7}{8}$	$\frac{3}{4}$	1	$2\frac{1}{4}$	2	
F 19	13	48		360	$2\frac{1}{2}$	$\frac{7}{8}$	$1\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{2}$	
F 20	14	48		378	$3\frac{1}{4}$	$1\frac{1}{8}$	2	3	$2\frac{1}{2}$	

A—Diagonal Ribs. B—Secondary Ribs. C—Intermediate Ribs. D—Thickness of Shaft in Center. E—Thickness of Base Plate.

Bases figured on basis of 3,000 lbs. per square inch tension.

STANDARD CAST IRON BEARERS FOR WOOD POSTS.



Pattern number.	Size of post in Ins.	Thickness of metal.	Capacity of shelf of bearer, lbs.	Bearing of timber on shelf, lbs.	Weight of bearer.
B1	6× 6	$\frac{3}{4}$	12,600	13,500	
B2	8× 8	$\frac{3}{4}$	15,100	16,500	
B3	10×10	1	18,800	19,500	
B4	12×12	1	22,700	22,500	
B5	12×12	$1\frac{1}{4}$	24,700	22,500	
B6	14×14	1	24,900	25,500	
B7	14×14	$1\frac{1}{4}$	27,900	25,500	
B8	16×16	$1\frac{1}{4}$			
B9	16×16	$1\frac{1}{2}$			

Bearers B1 and B2 have two brackets under shelf; balance have three brackets under shelf.

If Girder Straps are wanted, so state when ordering.

In ordering cast iron Bearers, always state pattern number.

SECTIONAL VIEW THROUGH FRONT OF BUILDING

SHOWING MANNER OF CONSTRUCTION OF BOTH FRONT AND INTERIOR OF BUILDING, ALSO SHOWING STORE DOOR ENTRANCE AND BASEMENT.

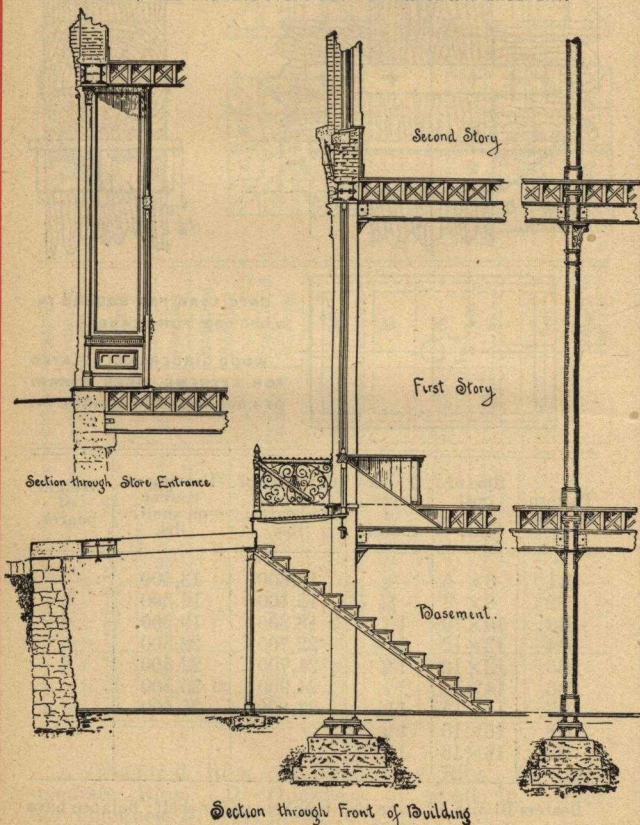
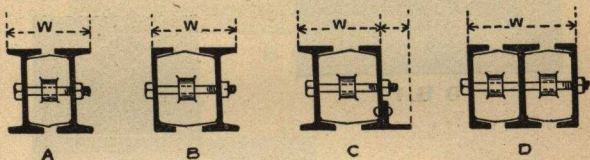


FIG. 230.

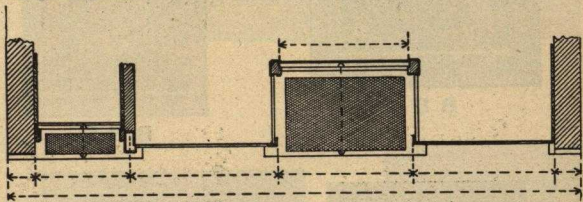
SPECIAL NOTICE.

In ordering Girders composed of two or more I Beams or Channels, it would facilitate matters, if the spread of beams, from out to out of flanges, were given as shown below, distance W, as well as section letter. If this measurement is given, then we can make the cast-iron separators to fit beams, and also get the length of bolts correctly for same.

Also state number of separators and bolts required, for the length of beam or girder wanted, giving location of same, and state if rosettes are wanted; otherwise they will not be furnished.



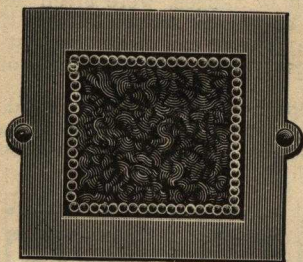
In ordering iron work for Store Fronts, it is necessary that we should have all the measurements, not only the full frontage, but the several measurements as shown below, and stating how many stories high the building is, giving thickness of front walls above.



We advise that parties ordering Iron Work send a sketch, or proper drawing of the work required, as this will assist us in making shop drawings, necessary for this class of work, and also be an assistance to the contractor in setting same.

We are prepared to furnish promptly estimates and designs of any Structural and Ornamental Iron Work, furnishing the work complete on the shortest possible time, guaranteeing material and workmanship to be first-class in every respect,

BEAM BOXES.



B B 1



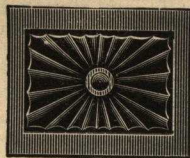
B B 2



B B 3.



B B 4



B B 5



B B 6



B B 7

BEAM BOXES.



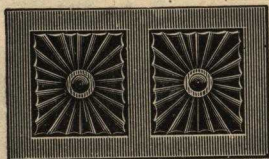
B B 8



B B 9



B B 10

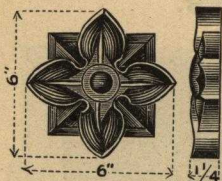


B B 11

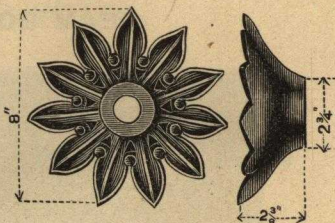


B B 12

ROSETTES.



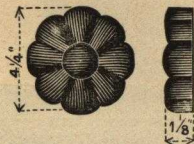
No. 106.



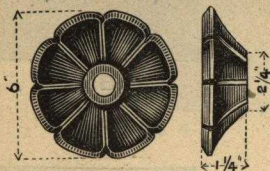
No. 107.



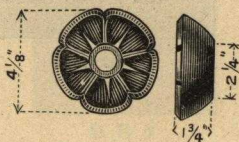
No. 108.



No. 109.



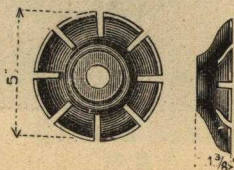
No. 115.



No. 121.

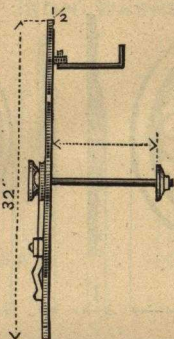


No. 122.



No. 124.

ORNAMENTAL ANCHORS.



No. 100.

Price, \$3.50 each.

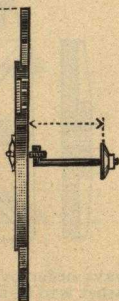
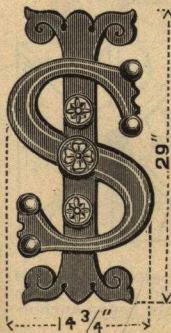
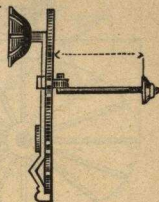
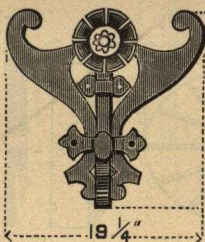
No. 100 A.

14" X 23" same design

Price, \$3.00 each

No. 101.

Price, \$2.50 each.

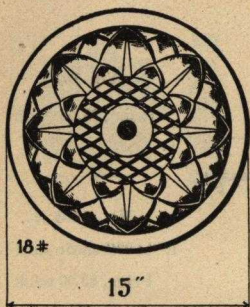


No. 102.

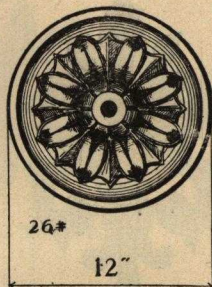
Price, \$3.50 each.

NOTE.—In ordering Ornamental Anchors give thickness of wall.

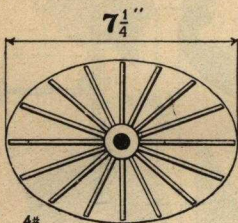
CAST IRON WASHERS.



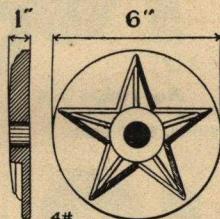
Pattern W. 7.



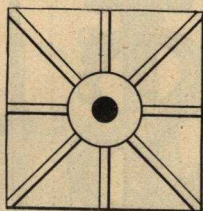
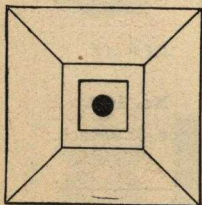
Pattern W. 8.



Pattern W. 9.

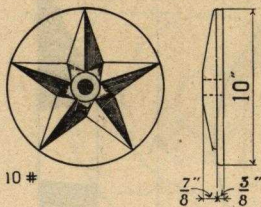


Pattern W. 10.



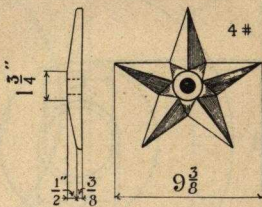
In ordering cast washers, always order by pattern letter and number, stating what size bolt, washer is to be used. The two lower designs can be made any size, and are used where heavy anchorages are required.

CAST IRON WASHERS.



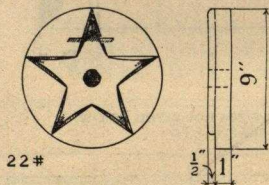
10 #

Pattern W. 1.



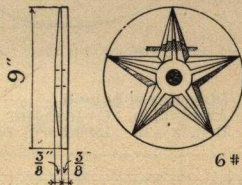
4 #

Pattern W. 2.



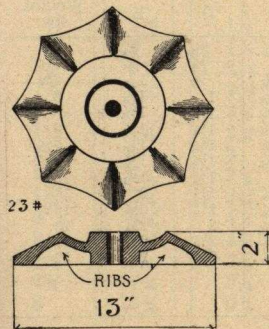
22 #

Pattern W. 3.



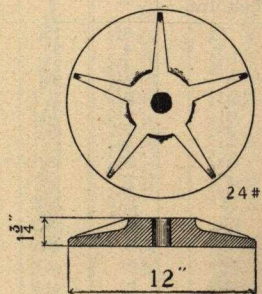
6 #

Pattern W. 4.



23 #

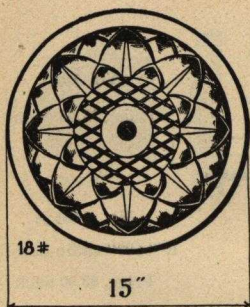
Pattern W. 5.



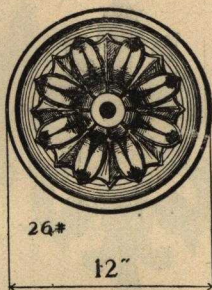
24 #

Pattern W. 6.

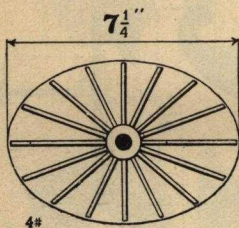
CAST IRON WASHERS.



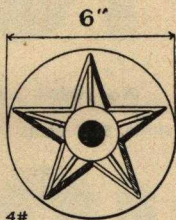
Pattern W. 7.



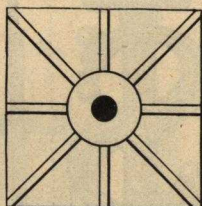
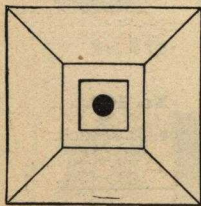
Pattern W. 8.



Pattern W. 9.

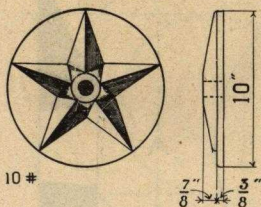


Pattern W. 10.



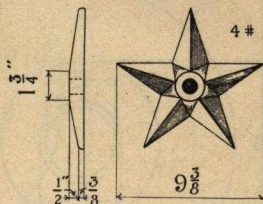
In ordering cast washers, always order by pattern letter and number, stating what size bolt, washer is to be used. The two lower designs can be made any size, and are used where heavy anchorages are required.

CAST IRON WASHERS.



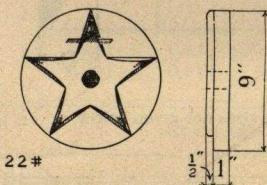
10 #

Pattern W. 1.



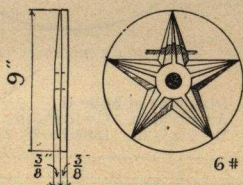
4 #

Pattern W. 2.



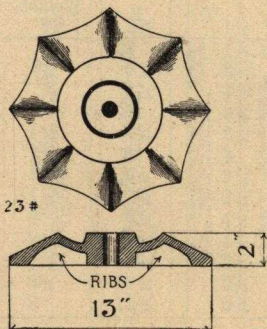
22 #

Pattern W. 3.



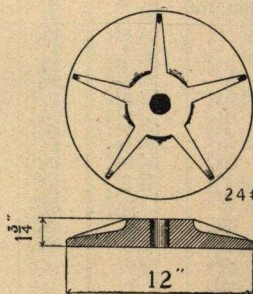
6 #

Pattern W. 4.



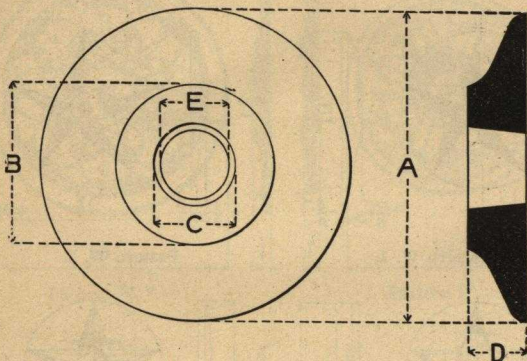
23 #

Pattern W. 5.



24 #

Pattern W. 6.

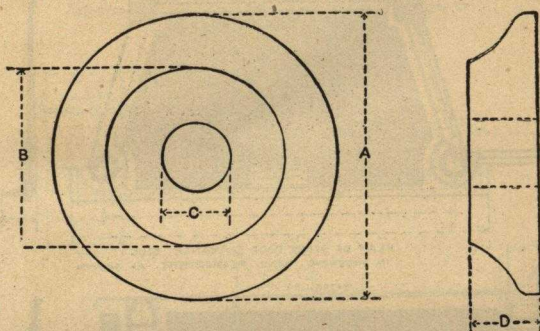
RAILROAD AND BRIDGE STANDARD
CAST IRON WASHERS.Diameter of bolt= d $A=4dx\frac{1}{4}$ in. $C=1dx\frac{1}{8}$ in. For sizes not given below. $B=2dx\frac{1}{4}$ in. $D=1d$

STANDARD CAST WASHER.

Diameter of Bolt, Ins.	A	B	C	D	E	Weight, lbs.
$\frac{5}{8}$	$3\frac{1}{2}$	$1\frac{3}{4}$	$\frac{7}{8}$	$\frac{5}{8}$	$\frac{3}{4}$	1
$\frac{3}{4}$	4	2	1	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{2}$
$\frac{7}{8}$	$4\frac{5}{8}$	$2\frac{3}{8}$	$1\frac{1}{8}$	$\frac{7}{8}$	$1\frac{1}{2}$	$2\frac{1}{4}$
1	$5\frac{1}{4}$	$2\frac{3}{4}$	$1\frac{3}{8}$	1	$1\frac{5}{8}$	3
$1\frac{1}{8}$	$5\frac{7}{8}$	3	$1\frac{1}{2}$	$1\frac{1}{8}$	$1\frac{3}{4}$	5
$1\frac{1}{4}$	$6\frac{1}{2}$	$3\frac{5}{8}$	$1\frac{5}{8}$	$1\frac{3}{8}$	$1\frac{7}{8}$	6
$1\frac{3}{4}$	$7\frac{1}{8}$	$3\frac{3}{4}$	$1\frac{3}{4}$	$1\frac{5}{8}$	$1\frac{7}{8}$	$7\frac{1}{2}$
$1\frac{1}{2}$	$7\frac{3}{4}$	4	$1\frac{7}{8}$	$1\frac{7}{8}$	$1\frac{3}{4}$	$9\frac{1}{2}$
$1\frac{5}{8}$	$8\frac{3}{8}$	$4\frac{1}{4}$	2	$1\frac{5}{8}$	$1\frac{7}{8}$	13
$1\frac{3}{4}$	9	$4\frac{1}{2}$	$2\frac{1}{8}$	$1\frac{3}{4}$	2	16
$1\frac{7}{8}$	$9\frac{5}{8}$	$4\frac{7}{8}$	$2\frac{1}{4}$	$1\frac{7}{8}$	$2\frac{1}{8}$	$18\frac{1}{2}$
2	$10\frac{1}{4}$	$5\frac{1}{8}$	$2\frac{3}{8}$	2	$2\frac{1}{4}$	23
$2\frac{1}{8}$	11	$5\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{8}$	$2\frac{3}{8}$	27
$2\frac{1}{4}$	12	$5\frac{3}{4}$	$2\frac{5}{8}$	$2\frac{1}{4}$	$2\frac{1}{2}$	32
$2\frac{1}{2}$						
$2\frac{3}{4}$						

We also have patterns for spool washers, packing washers, slot washers, bevel washers, and special washers of every description.

LIGHT STANDARD CAST WASHERS.


Diameter of bolt = d
 $A = 4d + \frac{1}{4}$ $C = 1d + \frac{1}{8}$

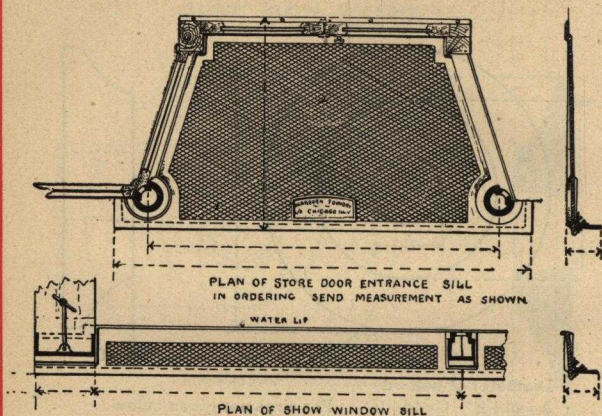
For sizes not given below

 $B = 2d + \frac{1}{4}$ $D = 1d$

STANDARD CAST WASHER.

Diameter of bolt = d .	A	B	C	D	Weight in lbs.
$\frac{1}{2}$	$2\frac{5}{8}$	$1\frac{1}{4}$	$\frac{9}{16}$	$\frac{5}{8}$	$\frac{1}{2}$
$\frac{5}{8}$	3	$1\frac{7}{8}$	$\frac{11}{16}$	$\frac{3}{4}$	$\frac{3}{4}$
$\frac{3}{4}$	$3\frac{1}{4}$	$2\frac{1}{8}$	$\frac{13}{16}$	$\frac{7}{8}$	$1\frac{1}{4}$
$\frac{7}{8}$	$3\frac{3}{4}$	$2\frac{1}{2}$	$\frac{15}{16}$	$\frac{7}{8}$	$1\frac{1}{2}$
1	4	$2\frac{3}{4}$	$1\frac{1}{16}$	$1\frac{1}{8}$	$2\frac{1}{2}$
$1\frac{1}{8}$	$4\frac{3}{4}$	$2\frac{3}{4}$	$1\frac{3}{16}$	$1\frac{1}{8}$	3
$1\frac{1}{4}$	6	3	$1\frac{5}{16}$	$1\frac{3}{8}$	$5\frac{1}{4}$
$1\frac{1}{2}$	$6\frac{1}{4}$	$3\frac{1}{4}$	$1\frac{7}{8}$	$1\frac{1}{2}$	6
$1\frac{3}{4}$	$7\frac{1}{4}$	$3\frac{3}{4}$	$1\frac{7}{8}$	$1\frac{3}{4}$	$9\frac{1}{2}$
2	$8\frac{1}{4}$	$4\frac{1}{4}$	$2\frac{1}{8}$	2	$17\frac{1}{4}$
$2\frac{1}{4}$	$9\frac{1}{4}$	$4\frac{3}{4}$	$2\frac{3}{8}$	$2\frac{1}{4}$	20
$2\frac{1}{2}$	$10\frac{1}{4}$	$5\frac{1}{4}$	$2\frac{5}{8}$	$2\frac{1}{2}$	$27\frac{1}{4}$
$2\frac{3}{4}$	$11\frac{1}{4}$	$5\frac{3}{4}$	$2\frac{7}{8}$	$2\frac{3}{4}$	36
3	$12\frac{1}{4}$	$6\frac{1}{4}$	$3\frac{1}{8}$	3	46

DETAILS OF SILL PLATES AND RISERS.



CAST-IRON STEP PLATES FIG No 190



PRICE 5 INCHES WIDE	\$ 50 PER FOOT	PRICE 8 INCHES WIDE	\$ 65 PER FOOT
" 6 " "	55 " "	" 10 " "	75 " "
" 7 " "	60 " "	" 12 " "	85 " "

DRILLED AND COUNTERSUNK AS SHOWN

CAST IRON RISERS.

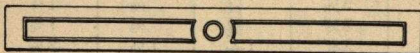


FIG No 18

PRICE \$ 65 PER FOOT



FIG No 17

PRICE \$ 65 PER FOOT



FIG No 12

PRICE \$ 65 PER FOOT



FIG No 20

PRICE \$ 65 PER FOOT

BALCONY AND PLATFORM BRACKETS.

WROUGHT IRON OR STEEL BRACKETS FOR SUPPORT OF
BALCONIES AND PLATFORMS.

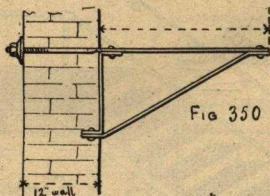


FIG 350

2-6 projection Price ----

3-0 projection Price ----

3-0 projection Price ----

3-6 projection Price ----

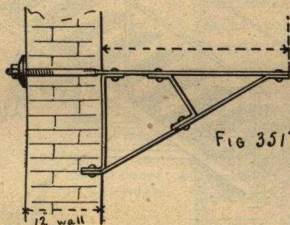


FIG 351

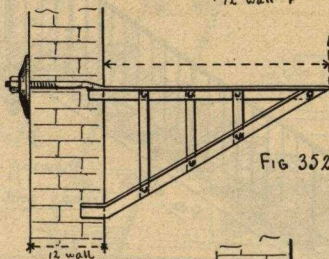


FIG 352

3-0 projection Price ----

3-6 projection Price ----

3-0 projection Price ----

3-6 projection Price ----

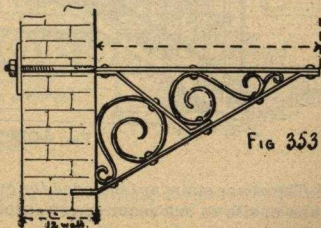
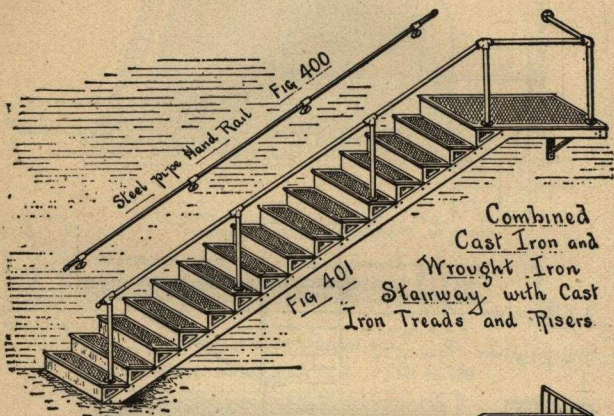
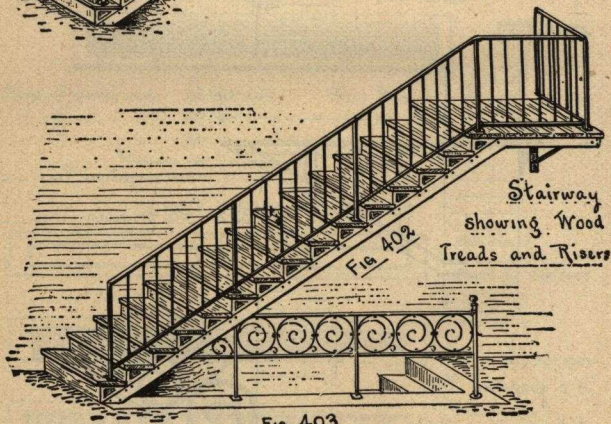


FIG 353

STAIRWAYS AND RAILINGS.



Combined
Cast Iron and
Wrought Iron
Stairway with Cast
Iron Treads and Risers.

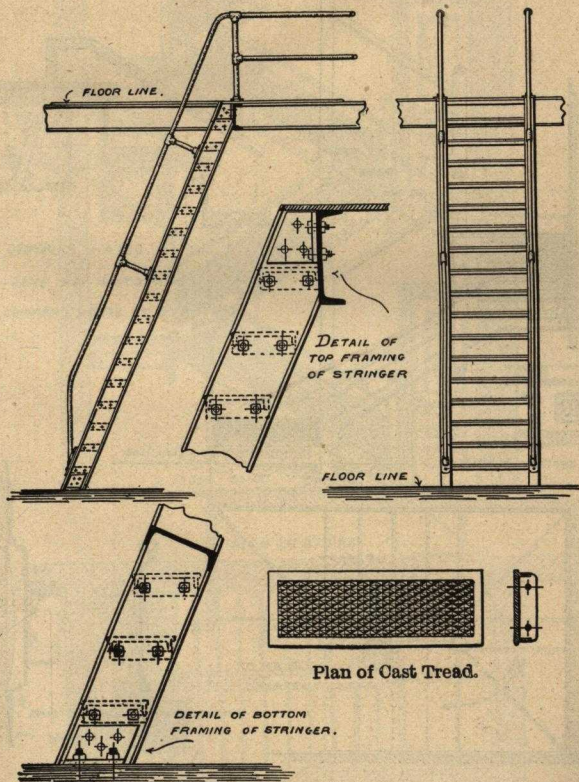


Stairway
showing Wood
Treads and Risers

Fig 403

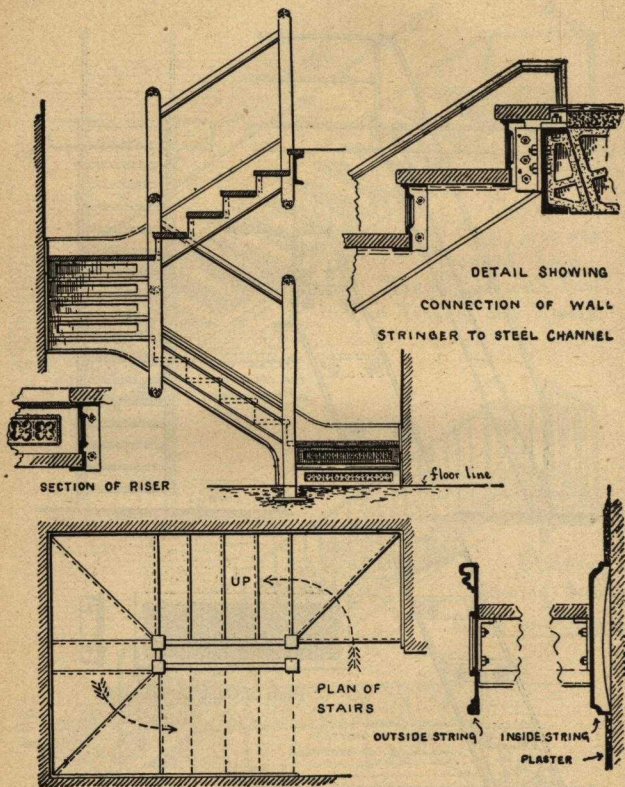
The above stairs are intended for outside and can be made any shape or size to suit requirements, usually 3-0 wide. Send full particulars in writing for prices.

STAIRWAYS USED IN WAREHOUSES,
POWER HOUSES, ETC.



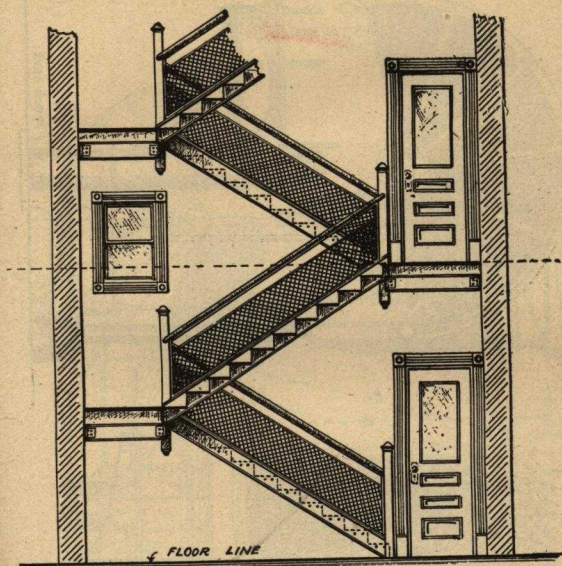
Always send full particulars when writing for prices. We will cheerfully submit special sketches upon receipt of guiding suggestions as to other designs.

DETAILS OF STAIRWAY.

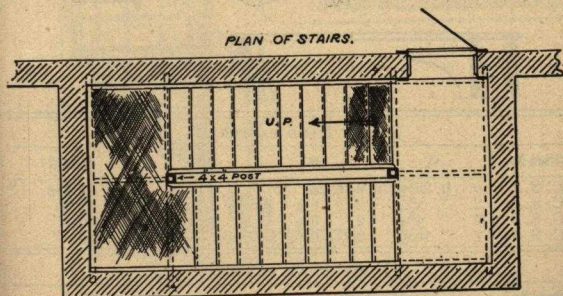


The above stairs are intended for **inside** and can be made any shape or size to suit requirements, usually 3-0 wide. Send full particulars in writing for prices.

DETAIL OF INTERIOR STAIRS.

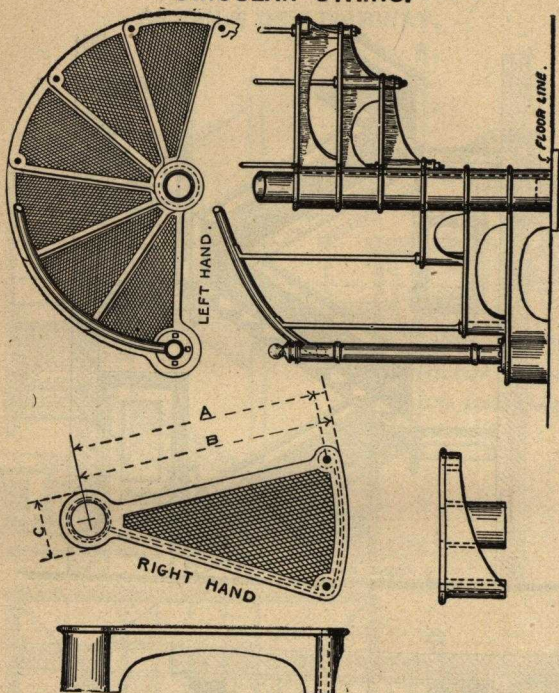


PLAN OF STAIRS.



The above stairs are intended for inside and can be made any shape or size to suit requirements, usually 3-0 wide. Send full particulars in writing for prices.

CIRCULAR STAIRS.



LEFT HAND PATTERN

Pattern No.	A	B	C	Weight
C. S. 1	0 ft 22 $\frac{1}{8}$ in.	0 ft. 23 in.	5 $\frac{1}{8}$ in.	35 lbs.
C. S. 2	2 " 4 $\frac{3}{4}$ "	2 " 6 $\frac{1}{4}$ "	7 "	57 "
C. S. 3	2 " 4 $\frac{3}{4}$ "	2 " 6 $\frac{1}{4}$ "	7 "	80 "
C. S. 4	2 " 10 $\frac{1}{2}$ "	3 " 0 "	7 "	55 "

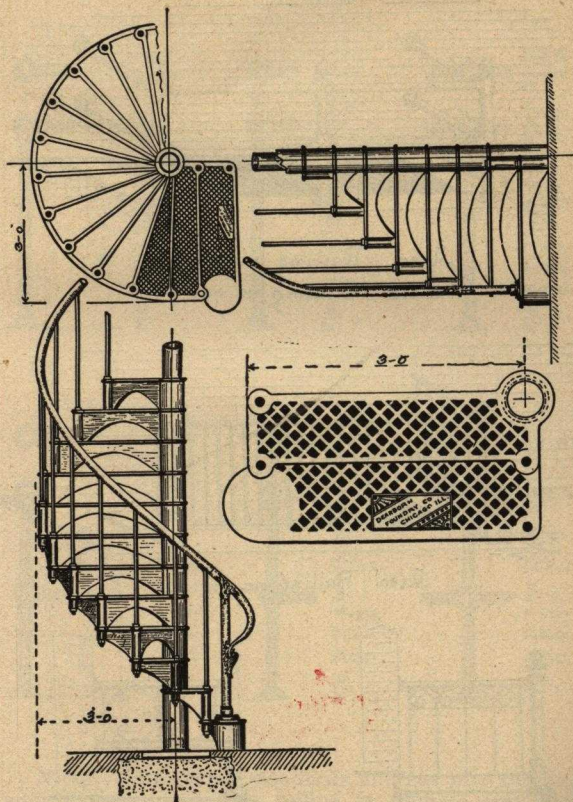
RIGHT HAND PATTERN

Pattern No.	A	B	C	Weight
C. S. 5	2 ft. 0 $\frac{1}{2}$ in.	2 ft. 2 in.	6 in.	50 lbs.
C. S. 6	2 " 4 $\frac{3}{4}$ "	2 " 6 $\frac{1}{4}$ "	7 "	55 "
C. S. 7	2 " 10 $\frac{3}{4}$ "	3 " 0 "	7 "	60 "

Send full Particulars when Writing for Prices on Circular Stairs.

CIRCULAR STAIRS.

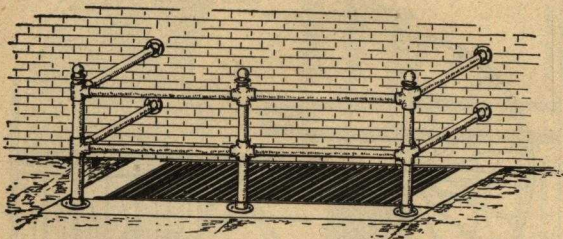
Details of Circular Stairs.
open pattern.



One right and one left hand open pattern 6 ft. 0 in. diameter.
These stairs can be made to suit any height of floor or landing
Send full particulars when ordering or writing for prices.

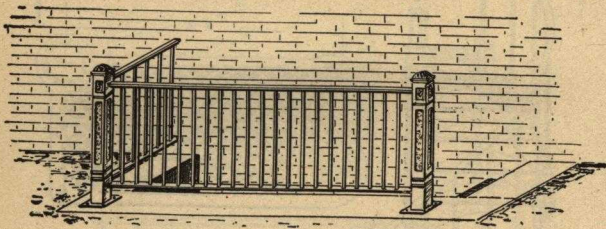
AREA RAILING, AREA GRATING AND AREA GUARDS

FOR PROTECTION AT BASEMENT ENTRANCES

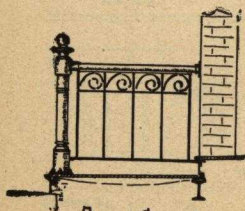


Area Railing FIG. 225.

Area Grating FIG. 226.

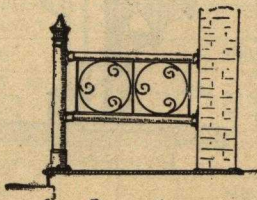


Area Railing FIG. 227.



Area Guards

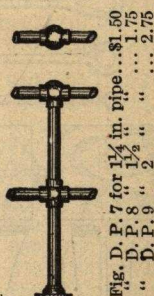
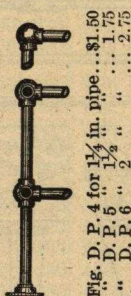
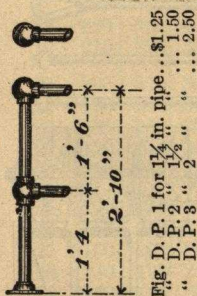
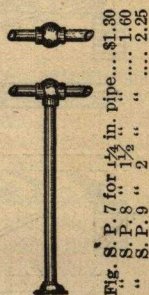
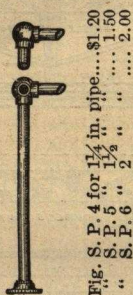
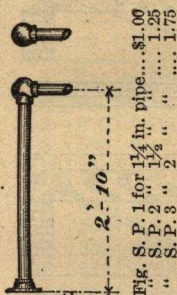
FIG. 228.



Area Guards

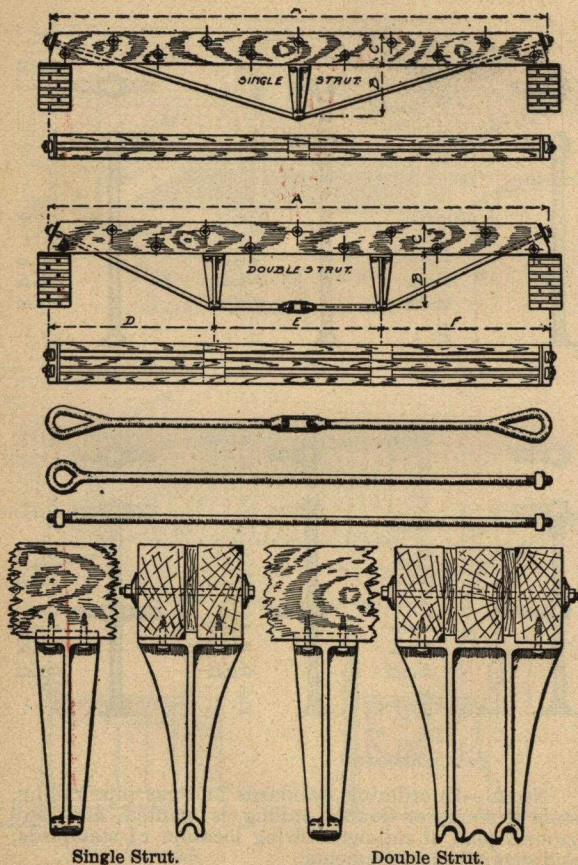
FIG. 229.

STANDARDS FOR GAS PIPE RAIL.



NOTE.—In ordering standards and gas pipe railing, state if single or double railing is wanted, also mail ground plan of railing showing location of standards, and give all measurements.

TRUSS RODS AND CAST IRON STRUTS FOR WOOD GIRDERS.



Single Strut.

Double Strut.

In writing for prices always send full particulars and sketch of your requirements, so we can quote you understandingly.

WOODEN BEAMS.

Table of safe quiescent loads for horizontal rectangular beams of white pine or spruce one inch broad, supported at both ends, the load being equally distributed over the span.

Span in feet.	DEPTH OF BEAM IN INCHES.										
	6	7	8	9	10	11	12	13	14	15	16
5	800	1090	1420	1800	2220	2690	3200	3750	4350	5000	5690
6	670	910	1180	1500	1850	2240	2670	3130	3630	4170	4740
7	570	780	1010	1290	1590	1920	2280	2680	3110	3570	4060
8	500	680	890	1120	1390	1680	2000	2350	2720	3130	3560
9	440	600	790	1000	1210	1490	1780	2090	2420	2780	3160
10	400	540	710	900	1110	1340	1600	1880	2180	2500	2840
11	360	490	650	820	1010	1220	1450	1710	1980	2270	2590
12	330	450	590	750	930	1120	1330	1560	1810	2080	2370
13	310	420	550	690	850	1030	1230	1440	1680	1920	2190
14	290	390	510	640	790	960	1140	1340	1560	1790	2030
15	270	360	470	600	740	900	1070	1250	1450	1670	1900
16	250	340	440	560	690	840	1000	1170	1360	1560	1780
17	230	320	420	530	650	790	940	1100	1280	1470	1670
18	220	300	400	500	620	750	890	1040	1210	1390	1580
19	210	290	380	470	590	710	840	990	1150	1320	1500
20	200	270	360	450	560	670	800	940	1090	1250	1420
21	190	260	340	430	530	640	760	890	1040	1190	1350
22	180	250	320	410	500	610	730	850	990	1140	1290
23	170	240	300	390	480	580	700	810	950	1090	1230
24	160	230	290	370	460	560	670	780	910	1040	1180
25	160	220	280	350	440	540	640	750	870	1000	1130
26	150	210	270	340	420	520	610	720	840	960	1090
27	150	200	260	330	400	500	590	690	810	920	1050
28	140	190	250	320	390	480	570	670	780	890	1010
29	140	190	250	310	380	460	550	650	750	860	980
30	130	180	240	300	370	450	530	630	730	830	950

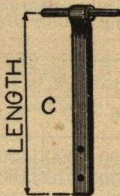
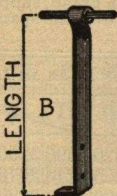
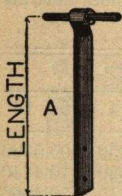
This table has been calculated for extreme fiber strain of 1,000 lbs. per square inch, being one-sixth the breaking strain, ordinary building timber of fair quality.

Oak and yellow pine will carry a load one-fourth greater.

When more accuracy is required, the weight of the beam itself must be deducted.

Care must be taken to let the beams rest for a sufficient distance on their supports to guard against crushing at the ends, especially in placing very heavy loads upon short but deep and strong beams.

PIN OR T ANCHORS.



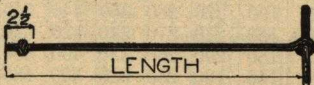
Price List.

Size of Iron	Length in Inches									
	12	14	16	18	20	24	30	36	42	48
1 x $\frac{1}{4}$ in.	.15	.17	.18	.19						
1 $\frac{1}{4}$ x $\frac{1}{4}$ "	.17	.19	.21	.23	.25					
1 $\frac{1}{2}$ x $\frac{1}{4}$ "	.22	.25	.27	.32	.34	.38				
2 x $\frac{1}{4}$ "	.29	.32	.35	.38	.41	.45	.50	.55	.60	.65
2 $\frac{1}{2}$ x $\frac{1}{4}$ "	.24	.35	.38	.42	.46	.52	.60	.68	.76	.84
2 x $\frac{3}{8}$ "	.28	.39	.45	.48	.51	.57	.69	.78	.87	.96

Strap
Anchors.

Price List.

Size of Iron	Length in Inches									
	12	14	16	18	20	24	30	36	42	48
1 $\frac{1}{4}$ x $\frac{1}{4}$ in.	.08	.10	.12	.14	.16	.18				
1 $\frac{1}{2}$ x $\frac{1}{4}$ "	.09	.11	.13	.15	.17	.19	.22			
2 x $\frac{1}{4}$ "	.12	.14	.15	.17	.19	.21	.28	.34		
2 $\frac{1}{2}$ x $\frac{1}{4}$ "	.15	.17	.18	.21	.24	.28	.34	.41	.48	.58
3 x $\frac{1}{4}$ "	.18	.20	.24	.26	.29	.36	.42	.50	.59	.66

Curb-wall
Anchors.

Price List.

Diameter of Iron	Length in Inches									
	12	14	16	18	20	24	30	36	42	48
$\frac{1}{2}$ in.	.14	.16	.18	.20	.22	.24	.28	.32		
$\frac{5}{8}$ "	.20	.22	.24	.26	.28	.30	.34	.38	.42	
$\frac{3}{4}$ "	.24	.26	.28	.30	.32	.36	.40	.46	.52	.60
$\frac{7}{8}$ "	.28	.30	.32	.34	.36	.40	.46	.52	.60	.70
1 "	.32	.36	.40	.24	.48	.56	.66	.76	.86	.96

In ordering give size of iron and length required.
Discounts upon application.

PRICE LIST DUPLEX JOIST HANGERS



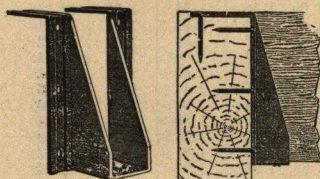
No. 10, to carry Joist.	.2	x 6 to 2	x10	20	cts.
No. 14, " " "	.2	x12 to 2	x16	30	"
No. 15, " " "	.3	x 6 to 3	x10	40	"
No. 18, " " "	.2 1/2	x 6 to 2 1/2	x16	40	"
No. 20, " " "	.4	x 6 to 4	x10	40	"
No. 21, " " "	.3	x12 to 3	x16	45	"
No. 28, " " "	.4	x12 to 4	x16	60	"
No. 53, " " "	.5	x 8 to 5	x16	75	"
No. 60, " " "	.6	x 8 to 6	x12	80	"
No. 60X, " " "	.6	x14 to 6	x16	\$1.00	
No. 80, " " "	.8	x 8 to 8	x12	1.00	
No. 35R, } Used in {	.8	x 8 to 8	x14	1.25 pair	
No. 35L, } pairs {	.10	x10 to 10	x14	with bolts	
No. 75R, } Used in pairs.....	10	x16 to 14	x18	2.00	
No. 75L, }					

PRICE LIST OF REGULAR SIZES OF VAN DORN STEEL JOIST HANGERS

(Regular No. 1 Hangers to attach to Wood Headers.)

2 x 6 inch Joist.....	\$.25	3 x 6 inch Joist.....	\$.30
2 x 8 " " ".....	.28	3 x 8 " " ".....	.35
2 x 10 " " ".....	.30	3 x 10 " " ".....	.38
2 x 12 " " ".....	.33	3 x 12 " " ".....	.40
2 x 14 " " ".....	.35	3 x 14 " " ".....	.43
2 x 16 " " ".....	.38	3 x 16 " " ".....	.45

VAN DORN JOIST HANGERS

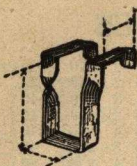


No. 1

4 x 6 inch Joist.....	\$.35	6 x 8 inch Joist.....	\$.75
4 x 8 " " ".....	.40	6 x 10 " " ".....	.83
4 x 10 " " ".....	.45	6 x 12 " " ".....	.90
4 x 12 " " ".....	.50	6 x 14 " " ".....	.98
4 x 14 " " ".....	.55	6 x 16 " " ".....	1.05
4 x 16 " " ".....	.60		
8 x 8 inch Joist.....	\$.90	10 x 10 inch Joist.....	\$1.20
8 x 10 " " ".....	1.00	10 x 12 " " ".....	1.30
8 x 12 " " ".....	1.10	10 x 14 " " ".....	1.40
8 x 14 " " ".....	1.20	10 x 16 " " ".....	1.50
8 x 16 " " ".....	1.30		
12 x 12 inch Joist.....	\$1.40	14 x 14 inch Joist.....	\$1.80
12 x 14 " " ".....	1.50	14 x 16 " " ".....	1.95
12 x 16 " " ".....	1.60		

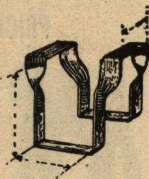
Special Size Hangers

Can make hangers any special size to order which, however, requires additional labor, and when figuring hangers for odd or fractional width or depth joists and timbers, add fifteen per cent. (15%) to the list price of hanger next larger in size.



PRICE LIST Of Single Stirrups

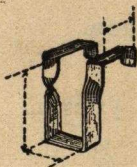
**Double Stirrups cost
double the prices here
quoted.**



Single Stirrup

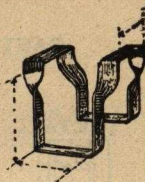
Double Stirrup

	$2x\frac{1}{4}$	$2\frac{1}{2}x\frac{1}{4}$	$3x\frac{1}{4}$	$2x\frac{3}{8}$	$2\frac{1}{2}x\frac{3}{8}$	$3x\frac{3}{8}$
2 x 10 x 2	\$.88	\$1.02	\$.....	\$1.04	\$.....	\$.....
2 x 10 x 4	1.00	1.14	.....	1.16	.....	.....
2 x 12 x 2	1.00	1.14	.....	1.16	.....	.....
2 x 12 x 4	1.12	1.26	1.34	1.30	1.46	.....
2 x 12 x 6	1.24	1.40	1.48	1.44	1.58	.....
2 x 14 x 2	1.12	1.26	1.34	1.30	.....	.....
2 x 14 x 4	1.24	1.40	1.48	1.44	1.58	1.96
2 x 14 x 6	1.40	1.54	1.60	1.56	1.78	2.16
3 x 10 x 3	.98	1.16	1.20	1.18	.....	.....
3 x 10 x 6	1.16	1.36	1.40	1.38	.....	.....
3 x 12 x 3	1.12	1.32	1.36	1.34	1.48	.....
3 x 12 x 6	1.28	1.44	1.48	1.46	1.66	2.08
3 x 12 x 9	1.44	1.68	1.72	1.70	2.06	2.36
3 x 14 x 3	1.20	1.44	1.48	1.46	1.66	2.00
3 x 14 x 6	1.36	1.60	1.64	1.62	1.90	2.20
3 x 14 x 9	1.56	1.80	1.84	1.82	2.14	2.44
4 x 10 x 4	1.06	1.24	1.28	1.26	1.42	.....
4 x 12 x 4	1.16	1.36	1.46	1.44	1.54	2.00
4 x 12 x 6	1.30	1.52	1.56	1.54	1.74	2.12
4 x 12 x 8	1.42	1.66	1.66	1.64	1.92	2.24
4 x 14 x 4	1.30	1.52	1.56	1.54	1.74	2.12
4 x 14 x 6	1.38	1.62	1.66	1.64	1.94	2.24
4 x 14 x 8	1.54	1.78	1.82	1.80	2.08	2.44
6 x 10 x 6	1.22	1.40	1.48	1.44	1.58	1.96
6 x 12 x 6	1.36	1.60	1.64	1.62	1.90	2.20
6 x 12 x 9	1.54	1.78	1.82	1.80	2.14	2.44
6 x 14 x 6	1.48	1.76	1.80	1.78	2.10	2.40
6 x 14 x 8	.....	1.84	1.88	1.86	2.18	2.52
6 x 14 x 10	.....	1.92	1.96	1.94	2.26	2.64
6 x 16 x 6	.....	1.84	1.88	1.86	2.18	2.52
6 x 16 x 8	.....	1.92	1.96	1.94	2.26	2.64
6 x 16 x 10	.....	2.00	2.04	2.02	2.34	2.76
8 x 10 x 8	.....	1.62	1.66	1.64	1.94	2.24
8 x 12 x 8	.....	1.78	1.82	1.80	2.14	2.44
8 x 12 x 10	.....	.....	2.00	1.96	2.30	2.60
8 x 14 x 8	.....	.....	2.00	1.96	2.30	2.60
8 x 14 x 10	.....	.....	2.16	2.14	2.46	2.80
8 x 16 x 8	.....	.....	2.16	2.14	2.46	2.80
8 x 16 x 10	.....	.....	2.32	2.30	2.62	2.96
9 x 10 x 9	.....	.....	1.82	1.80	2.14	2.44
9 x 12 x 9	.....	.....	2.00	1.96	2.30	2.60
9 x 14 x 9	.....	.....	2.16	2.14	2.46	2.80
9 x 16 x 9	.....	.....	2.32	2.30	2.62	2.96
10 x 10 x 10	.....	.....	1.92	1.90	2.14	2.52
10 x 12 x 10	.....	.....	2.08	2.06	2.38	2.72
10 x 14 x 10	.....	.....	2.24	2.20	2.54	2.88
10 x 16 x 10	.....	.....	2.40	2.36	2.70	3.04



PRICE LIST **Of Single Stirrups**

Double Stirrups cost
double the prices here
quoted.

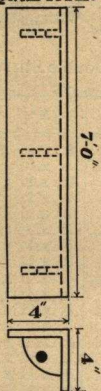


Single Stirrup

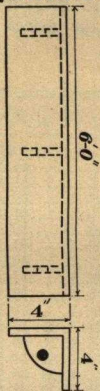
Double Stirrup

	$3\frac{1}{2} \times 3\frac{3}{8}$	$4 \times 3\frac{3}{8}$	$2 \times 1\frac{1}{2}$	$2\frac{1}{2} \times 1\frac{1}{2}$	$3 \times 1\frac{1}{2}$	$3\frac{1}{2} \times 1\frac{1}{2}$	$4 \times 1\frac{1}{2}$
2 x 10 x 2	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....	\$.....
2 x 10 x 4	.....	.....	.....	.....	.....	.....	.....
2 x 12 x 2	.....	.....	.....	.....	.....	.....	.....
2 x 12 x 4	.....	.....	.....	.....	.....	.....	.....
2 x 12 x 6	.....	.....	.....	.....	.....	.....	.....
2 x 14 x 2	.....	.....	.....	.....	.....	.....	.....
2 x 14 x 4	.....	.....	.....	.....	.....	.....	.....
2 x 14 x 6	.....	.....	.....	.....	.....	.....	.....
3 x 10 x 3	.....	.....	.....	.....	.....	.....	.....
3 x 10 x 6	.....	.....	.....	.....	.....	.....	.....
3 x 12 x 3	.....	.....	.....	.....	.....	.....	.....
3 x 12 x 6	.....	.....	1.92	2.20	.....	.....	.....
3 x 12 x 9	2.60	.....	2.24	2.52	.....	.....	.....
3 x 14 x 3	2.24	.....	1.84	2.16	.....	.....	.....
3 x 14 x 6	2.50	.....	2.08	2.40	.....	.....	.....
3 x 14 x 9	2.88	.....	2.32	2.72	.....	.....	.....
4 x 10 x 4	.....	.....	.....	.....	.....	.....	.....
4 x 12 x 4	.....	.....	1.84	2.08	.....	.....	.....
4 x 12 x 6	.....	.....	2.00	2.24	.....	.....	.....
4 x 12 x 8	.....	.....	2.14	2.40	.....	.....	.....
4 x 14 x 4	.....	.....	2.00	2.24	.....	.....	.....
4 x 14 x 6	2.52	2.96	2.10	2.44	2.96	.....	.....
4 x 14 x 8	2.84	3.20	2.30	2.70	3.20	.....	.....
6 x 10 x 6	2.32	.....	1.90	2.16	.....	.....	.....
6 x 12 x 6	2.50	2.92	2.08	2.40	2.92	3.36	3.84
6 x 12 x 9	2.84	3.20	2.32	2.70	3.20	3.76	4.32
6 x 14 x 6	2.72	3.12	2.20	2.60	3.12	3.64	4.16
6 x 14 x 8	2.94	3.36	2.40	2.80	3.36	3.92	4.48
6 x 14 x 10	3.16	3.60	2.60	3.00	3.60	4.20	4.80
6 x 16 x 6	2.94	3.36	2.40	2.80	3.36	3.92	4.48
6 x 16 x 8	3.16	3.60	2.60	3.00	3.60	4.20	4.80
6 x 16 x 10	3.18	3.84	2.80	3.20	3.84	4.48	5.12
8 x 10 x 8	2.52	2.96	2.10	2.44	2.96	.....	.....
8 x 12 x 8	2.84	3.20	2.32	2.70	3.20	3.76	4.32
8 x 12 x 10	3.04	3.52	2.48	2.88	3.52	4.12	4.72
8 x 14 x 8	3.04	3.52	2.48	2.88	3.52	4.12	4.72
8 x 14 x 10	3.32	3.76	2.64	3.08	3.76	4.40	5.00
8 x 16 x 8	3.32	3.76	2.64	3.08	3.76	4.40	5.00
8 x 16 x 10	3.48	4.04	2.80	3.28	4.04	4.68	5.32
9 x 10 x 9	2.84	3.20	2.32	2.70	3.20	3.76	4.32
9 x 12 x 9	3.04	3.52	2.48	2.88	3.52	4.12	4.72
9 x 14 x 9	3.32	3.76	2.64	3.08	3.76	4.40	5.00
9 x 16 x 9	3.48	4.04	2.80	3.28	4.04	4.68	5.32
10 x 10 x 10	2.96	3.40	2.42	2.82	3.40	3.96	4.52
10 x 12 x 10	3.12	3.64	2.56	3.00	3.64	4.24	4.48
10 x 14 x 10	3.36	3.92	2.72	3.20	3.92	4.56	5.20
10 x 16 x 10	3.60	4.12	2.88	3.40	4.12	4.80	5.52

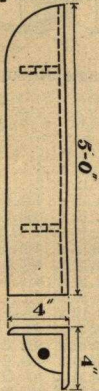
CAST IRON CORNER GUARDS.

 $\frac{1}{2}$ " METAL.

CG 1

 $\frac{1}{2}$ " METAL.

CG 2

 $\frac{1}{2}$ " METAL.

CG 3

 $\frac{1}{2}$ " METAL.

CG 4

 $\frac{1}{2}$ " METAL.

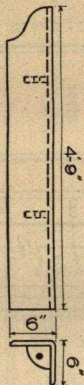
CG 5

 $\frac{3}{4}$ " METAL.

CG 6

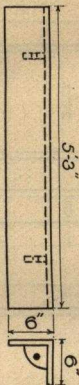
CAST IRON CORNER GUARDS.

$\frac{3}{16}$ " METAL



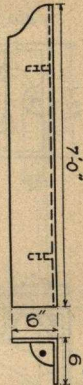
CG 7

$\frac{3}{4}$ " METAL



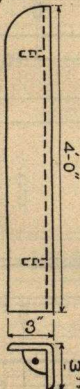
CG 8

$\frac{1}{2}$ " METAL



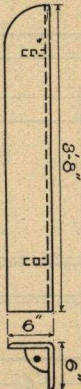
CG 9

$\frac{7}{16}$ " METAL



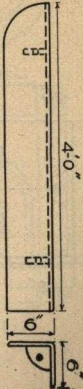
CG 10

$\frac{5}{8}$ " METAL



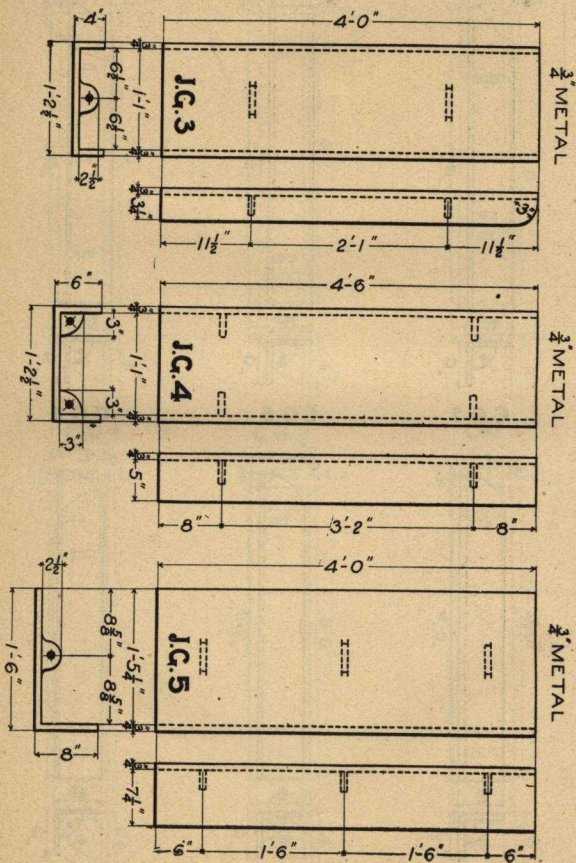
CG 11

$\frac{1}{2}$ " METAL

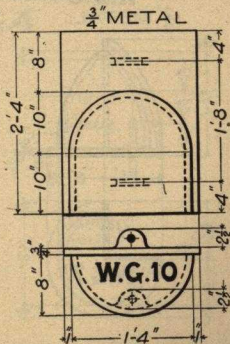
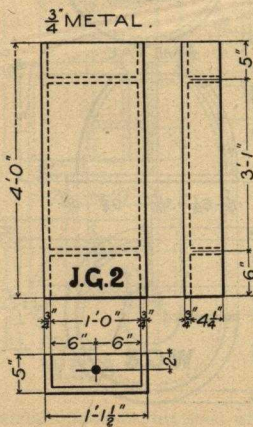
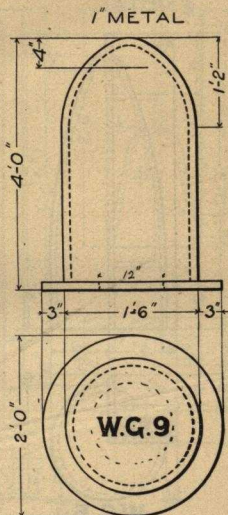
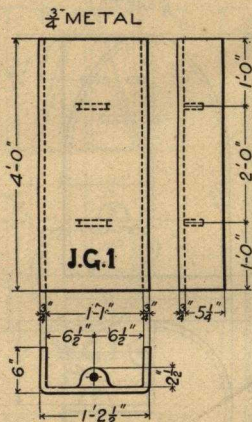


CG 12

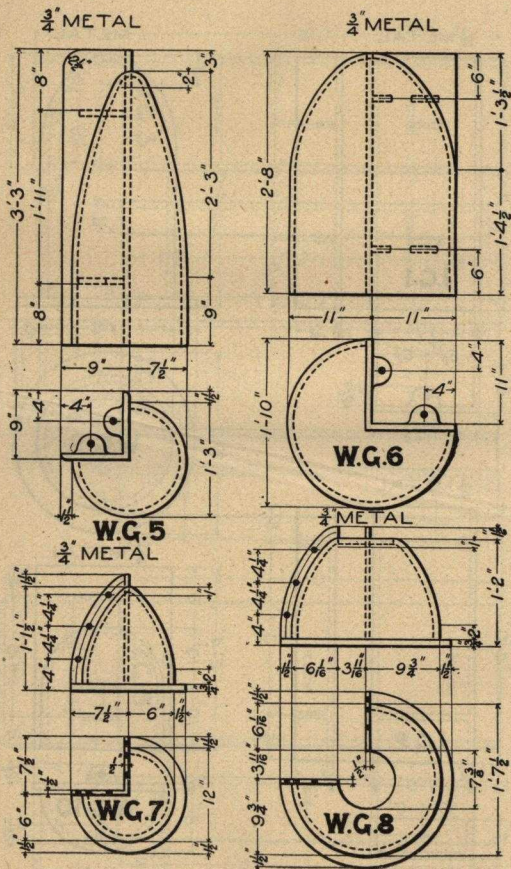
CAST IRON JAMB GUARDS.



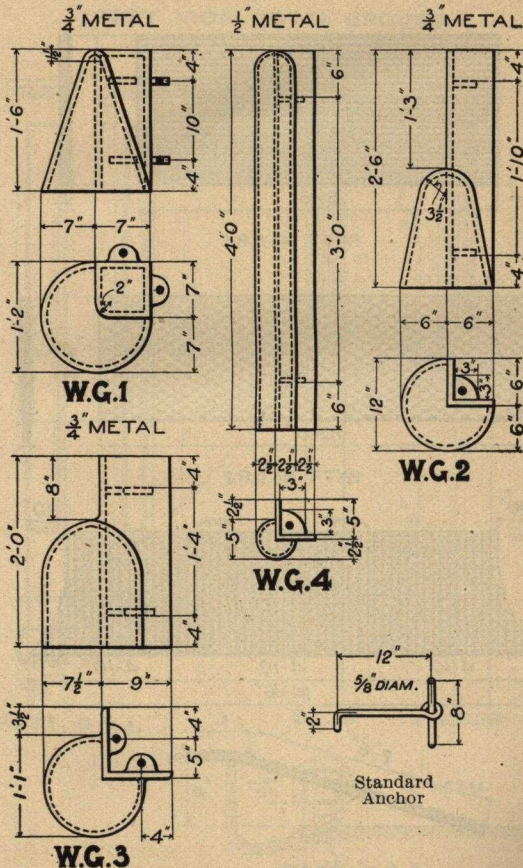
CAST IRON JAMB AND WAGON WHEEL GUARDS.



CAST IRON WAGON WHEEL GUARDS.

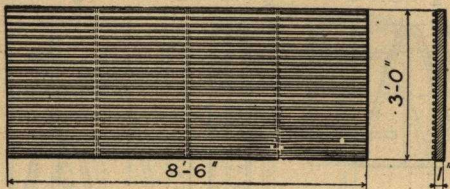


CAST IRON WAGON WHEEL GUARDS.

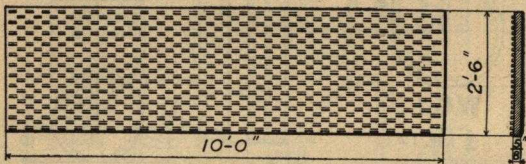


Standard Anchors Furnished with Guards as Shown, Unless Otherwise Specified.

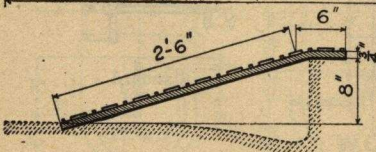
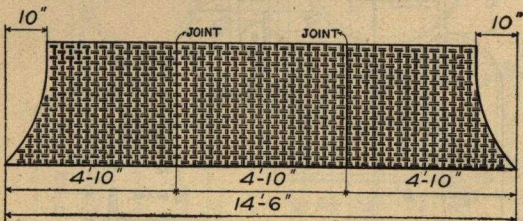
CAST IRON DRIVEWAY PLATES.



PAT T. No.D.P. 1



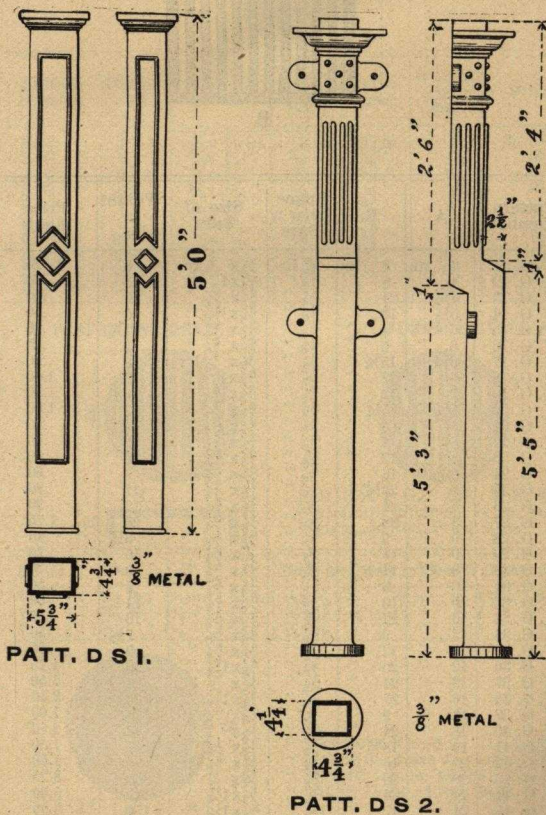
PAT T. No.D.P. 2



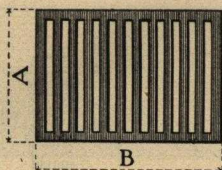
PAT T. No.D.P. 3

In writing for Prices state sizes required.

CAST IRON DOWN SPOUTS.

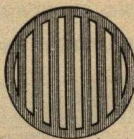


LIST OF VENTILATING GRATES.



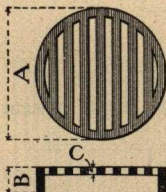
Pattern Number	A	B	Space betw'n Bars	Size of Bars	Weight in lbs.	Price Each
V. G. 11	4 in.	8 in.	$\frac{5}{16}$ in.	$\frac{3}{8} \times \frac{1}{16}$ in.	3	\$.25
V. G. 12	4	8	$\frac{1}{8}$	$\frac{1}{8} \times 1$	6	.30
V. G. 13	$4\frac{1}{2}$	24	$\frac{1}{8}$	$\frac{3}{8} \times \frac{3}{8}$	6	.50
V. G. 14	$5\frac{1}{2}$	13	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	6	.50
V. G. 15	6	4	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	$2\frac{1}{2}$	.25
V. G. 16	6	6	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	3	.25
V. G. 17	$6\frac{5}{8}$	$15\frac{5}{8}$	$\frac{1}{4}$	$1\frac{1}{8} \times 1\frac{1}{8}$	8	.60
V. G. 18	6	27	$\frac{3}{8}$	$\frac{3}{8} \times 1$	18	1.00
V. G. 19	7	12	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	6	.50
V. G. 20	$7\frac{1}{4}$	$35\frac{1}{4}$	$\frac{1}{8}$	$\frac{3}{8} \times \frac{1}{8}$	17	1.00
V. G. 21	8	6	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	4	.40
V. G. 22	8	8	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	5	.40
V. G. 23	8	12	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	7	.50
V. G. 24	8	16	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	9	.60
V. G. 25	8	$23\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{2} \times 1\frac{1}{2}$	11	.90
V. G. 26	8	24	$\frac{1}{2}$	$1\frac{1}{2} \times \frac{5}{8}$	12	.90
V. G. 27	8	38	$\frac{5}{8}$	$\frac{3}{2} \times \frac{5}{8}$	28	1.75
V. G. 28	9	9	$\frac{3}{8}$	$\frac{3}{2} \times \frac{5}{8}$	$6\frac{1}{2}$	.45
V. G. 29	9	13	$\frac{1}{8}$	$\frac{1}{8} \times \frac{3}{4}$	16	.75
V. G. 30	9	14	$\frac{1}{8}$	$\frac{1}{8} \times \frac{5}{4}$	9	.75
V. G. 31	10	6	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	5	.50
V. G. 32	10	10	$\frac{1}{2}$	$\frac{3}{8} \times \frac{5}{8}$	11	.60
V. G. 33	10	12	$\frac{1}{2}$	$\frac{3}{8} \times \frac{5}{8}$	10	.60
V. G. 34	12	9	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	$7\frac{1}{2}$	.50
V. G. 35	12	12	$\frac{3}{8}$	$\frac{3}{8} \times \frac{5}{8}$	9	.60
V. G. 36	12	20	$\frac{5}{8}$	$\frac{5}{8} \times 1\frac{1}{8}$	30	1.75
V. G. 37	12	24	$\frac{1}{2}$	$1\frac{1}{2} \times \frac{7}{8}$	24	1.50
V. G. 38	16	27	$\frac{1}{8}$	$\frac{3}{2} \times 1\frac{1}{8}$	96	3.50
V. G. 39	18	9	$\frac{1}{2}$	$1\frac{1}{2} \times \frac{5}{8}$	13	1.00
V. G. 40	18	24	$\frac{3}{4}$	$1\frac{1}{2} \times 1$	46	2.00
V. G. 41	19	$18\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2} \times 1\frac{1}{2}$	21	1.50
V. G. 42	20	16	$\frac{1}{2}$	$1\frac{1}{2} \times \frac{5}{8}$	24	1.50
V. G. 43	20	36	$\frac{3}{4}$	$1\frac{1}{2} \times 1$	60	3.25
V. G. 44	24	30	$\frac{3}{8}$	$\frac{3}{2} \times 1\frac{1}{4}$	120	5.00
V. G. 45	24	47	$1\frac{1}{2}$	$\frac{3}{8} \times 1\frac{1}{2}$	154	6.00
V. G. 46	27	27	$\frac{1}{2}$	$1\frac{1}{2} \times \frac{5}{8}$	44	2.50

LIST OF SEWER GRATES.

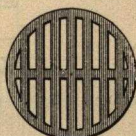


Pattern Number	Diameter	Size of Bars	Space bet'n Bars	Thickness	Weight in lbs.	Price
S. G. 1	4 in.	$\frac{5}{8} \times \frac{3}{8}$ in.	$\frac{1}{4}$ in.	$\frac{3}{8}$ in.	$\frac{3}{4}$	\$.25
S. G. 2	5 "	$\frac{3}{8} \times \frac{5}{8}$ "	$\frac{3}{8}$ "	$\frac{5}{8}$ "	$1\frac{1}{2}$	.30
S. G. 3	6 "	$\frac{3}{8} \times \frac{5}{8}$ "	$\frac{3}{8}$ "	$\frac{5}{8}$ "	2	.30
S. G. 4	$6\frac{1}{2}$ "	$\frac{3}{8} \times \frac{1}{2}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$2\frac{1}{2}$	.35
S. G. 5	7 "	$\frac{3}{8} \times \frac{5}{8}$ "	$\frac{3}{8}$ "	$\frac{5}{8}$ "	3	.40
S. G. 6	8 "	$\frac{3}{8} \times \frac{5}{8}$ "	$\frac{3}{8}$ "	$\frac{5}{8}$ "	4	.40
S. G. 7	10 "	$\frac{1}{2} \times \frac{3}{4}$ "	$\frac{1}{2}$ "	$\frac{3}{4}$ "	7	.60
S. G. 8	$10\frac{1}{2}$ "	$1 \times 1\frac{1}{2}$ "	$1\frac{1}{2}$ "	$1\frac{1}{2}$ "	21	1.00
S. G. 9	$13\frac{1}{2}$ "	$\frac{7}{8} \times \frac{7}{8}$ "	$\frac{1}{2}$ "	$\frac{7}{8}$ "	17	1.25
S. G. 10	$15\frac{1}{2}$ "	$1 \times \frac{7}{8}$ "	$\frac{1}{2}$ "	1 "	28	1.75

VENTILATING GRATE

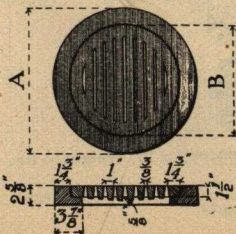


FURNACE GRATE



Pattern No., F. G. 1; Dia., 21 in; Bars, $\frac{5}{8} \times 1\frac{1}{4}$ in.; Spaces, $\frac{1}{2}$ in. apart; Weight, 54 lbs.; Price \$2.50

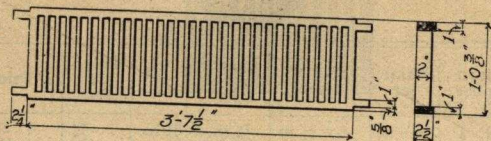
Pattern No.	A	B	C	Size of Bars	Space bet'n Bars	Weight	Price
V. G. 1	$5\frac{1}{4}$ in.	$1\frac{3}{8}$ in.	$\frac{1}{2}$ in.	$\frac{7}{8} \times \frac{1}{2}$ in.	$\frac{3}{8}$ in.	4 lbs.	\$.40
V. G. 2	$7\frac{3}{4}$ "	$1\frac{3}{8}$ "	$\frac{3}{4}$ "	$\frac{1}{2} \times \frac{3}{4}$ "	$\frac{1}{2}$ "	8 "	.60
V. G. 3	$10\frac{1}{2}$ "	$1\frac{1}{4}$ "	$\frac{5}{8}$ "	$\frac{1}{2} \times \frac{5}{8}$ "	$\frac{1}{2}$ "	13 "	1.00



Pattern No., S. G. 11; A $19\frac{3}{4}$ in.; B $15\frac{1}{4}$ in.; Bars at center. 1×2 in.; Weight frame, 96 lbs.; Weight of cover, 51 lbs.; Price \$6.00.

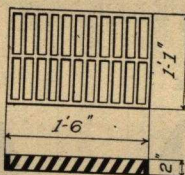
VENTILATING GRATES.

V G 28



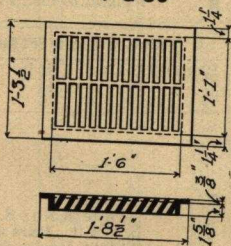
Bars $\frac{1}{2}$ x 2 in. Spaces $\frac{3}{4}$ in. Frame 1 x $2\frac{1}{2}$ in. Weight 126 lbs.

V G 29



Frame $2 \times \frac{3}{8}$ in. Spaces $1\frac{1}{4}$ in. Bars $\frac{1}{2}$ in. at top. Weight 60 lbs.

V G 30



Frame $\frac{3}{8}$ in. thick. Bars $\frac{1}{2}$ in. at top. Spaces $1\frac{1}{4}$ in. Weight 65 lbs.

VENTILATING GRATES.

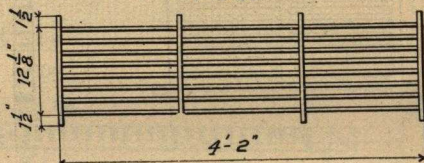
V G 31

BAR 1" APART



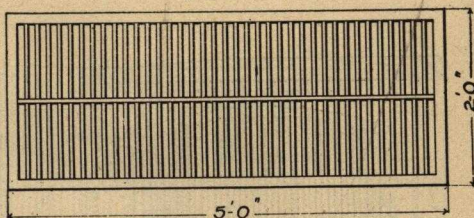
Pat. No. Bars, $\frac{1}{4} \times \frac{3}{4}$ in. Ends, $1\frac{3}{8} \times \frac{3}{4}$ in. Sides, $\frac{3}{4} \times \frac{3}{4}$ in.
eight, 40 lbs. Price

V G 32



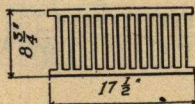
Pat. No. Bars, $\frac{1}{2} \times 1\frac{1}{2}$ in. Cross pieces, $\frac{1}{2} \times 1\frac{1}{2}$. Weight, 82 lbs.
Price

V G 33



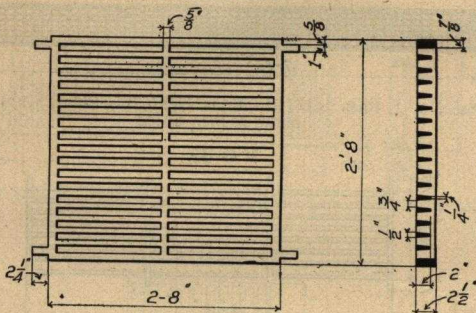
Pat. No. Bars, $\frac{1}{2} \times 1$ in. Spaces, 1 in. Ends and sides, $1\frac{3}{8} \times 1$ in.
Weight, 150 lbs. Price

V G 34

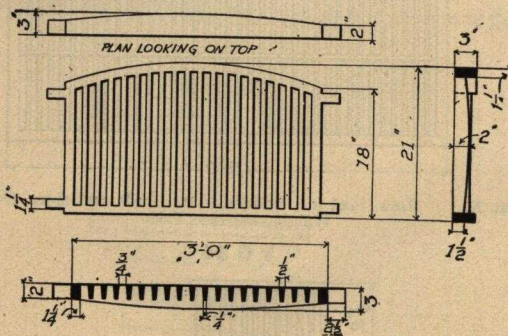


Pat. No. Bars, $\frac{3}{8} \times \frac{5}{8}$ in. Spaces, $\frac{7}{16}$ in. Side pieces $1 \times \frac{5}{8}$ in.
Weight 13 lbs. Price

CAST IRON AREA GRATINGS.

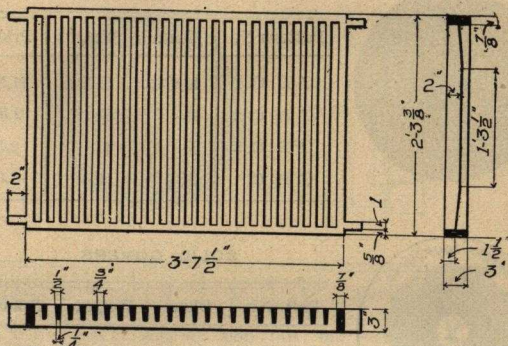


Pattern No. . Bars $\frac{1}{2} \times 2$ in., $\frac{3}{4}$ in. apart. Weight, 188 lbs.
A G 20 Price

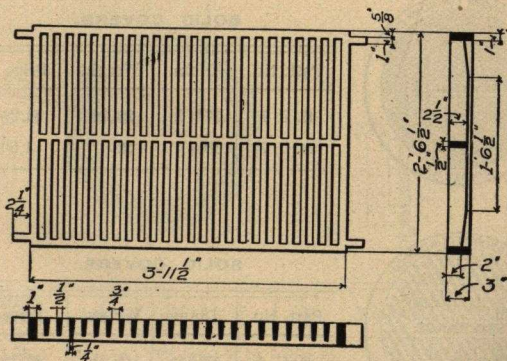


Pattern No. . Bars $\frac{1}{2} \times 2$ in., $\frac{3}{4}$ in. apart. Weight, 150 lbs.
A G 21 Price

CAST IRON AREA GRATINGS.



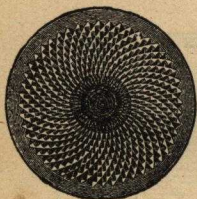
Pattern No. . Bars, $2 \times \frac{1}{2}$ in., $\frac{3}{4}$ in. apart. Weight, 226 lbs.
AG 22 Price



Pattern No. . Bars $2\frac{1}{2} \times \frac{1}{2}$ in., $\frac{3}{4}$ in. apart. Weight, 380 lbs.
AG 23 Price

COAL HOLE AND SEWER COVERS.

SOLID COVERS.



Pattern No.	Diam.	Weight	Price
C. H. C. 1	15½ in.	24 lbs.	\$1.50
C. H. C. 2	18 "	31 "	2.00
C. H. C. 3	20 "	41 "	2.50
C. H. C. 4	23¾ "	52 "	4.00



SOLID COVERS.

Patt. No.	Diam.	Weight	Price
C. H. C. 5	17 in.	25 lbs.	\$1.50
C. H. C. 6	18 "	32 "	2.00



SOLID COVERS.

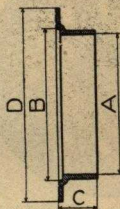
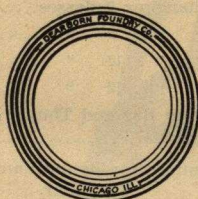
Patt. No.	Diam.	Weight	Price
S. C. 1	17¾ in.	20 lbs.	\$1.25
S. C. 2	18¾ "	22 "	1.50



SOLID COVERS.

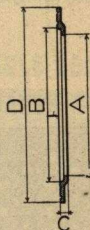
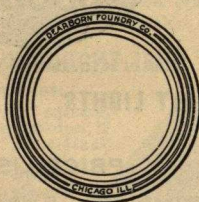
Patt. No.	Diam.	Weight	Price
S. C. 3	17¾ in.	14¼ lbs.	\$1.25
S. C. 4	18 "	16½ "	1.50

CAST THIMBLES FOR COAL HOLE COVERS.



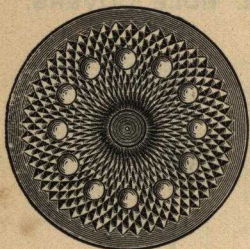
Pattern Number	A	B	C	D	Metal	Weight each	Price
C. T. 1	14 $\frac{1}{2}$ in.	15 $\frac{3}{4}$ in.	4 in.	20 in.	$\frac{3}{8}$ in.	36 lbs.	\$ 1.50
C. T. 2	17 "	18 $\frac{1}{8}$ "	4 "	22 "	$\frac{3}{8}$ "	44 "	2.00
C. T. 3	19 "	20 $\frac{1}{8}$ "	4 "	24 "	$\frac{5}{8}$ "	47 "	2.50
C. T. 4	22 $\frac{3}{8}$ "	24 "	4 "	28 $\frac{3}{4}$ "	$\frac{5}{8}$ "	54 "	4.00

CAST RINGS FOR COAL HOLE COVERS.



Pattern Number	A	B	C	D	Metal	Weight each	Price
C. R. 1	14 $\frac{3}{4}$ in.	15 $\frac{3}{4}$ in.	$\frac{7}{8}$ in.	19 $\frac{5}{8}$ in.	$\frac{3}{8}$ in.	20 lbs.	\$ 1.00
C. R. 2	17 "	18 "	$\frac{7}{8}$ "	22 "	$\frac{3}{8}$ "	21 "	1.25
C. R. 3	19 "	20 "	$\frac{7}{8}$ "	24 "	$\frac{3}{8}$ "	22 "	1.50
C. R. 4	22 $\frac{5}{8}$ "	24 "	$\frac{7}{8}$ "	28 $\frac{1}{4}$ "	$\frac{5}{8}$ "	29 "	2.50

COAL HOLE LIGHTS.



Cut of 20 in. Coal Hole Light.

PRICE LIST.

16 in. diameter, 6 glasses.....	\$2.50
18 in. " 9 "	3.00
20 in. " 12 "	3.50
24 in. " 12 "	5.00
Fastening Bar and Thumb Screw extra.....	.50

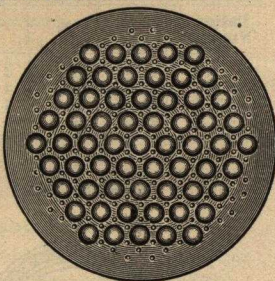
Thimbles for Round Vaults made
to order.

ROUND VAULT LIGHTS.

PRICE LIST.

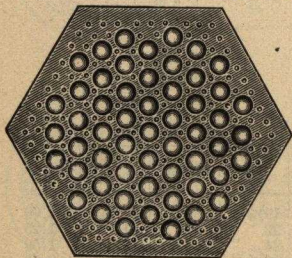
16 in. diam., round, 30 glasses...	\$3.50
18 in. " " 36 "	5.00
21 in. " " 54 "	6.50
23 in. " " 60 "	8.00

The above sizes always on hand.



Cut of 23 in. Round Vault Light.

HEXAGON VAULT LIGHTS.



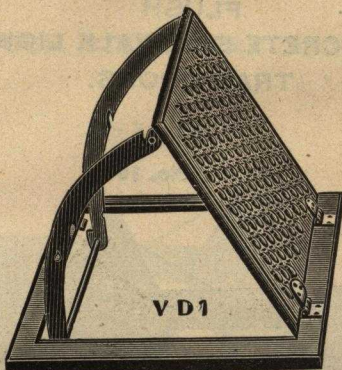
Cut of 21 in. Hexagon Vault Light.

PRICE LIST.

18 in. Hexagon, 43 glasses....	\$5.00
21 in. " 55 "	8.00
25 in. " 91 "	11.00
29 in. " 133 "	15.00

Thimbles or Rings for Hexagon
Covers made to order.

VENTILATING DOORS.



Cut Showing Construction of Ventilating Door.

PRICE LIST.

Small Ventilating Door, 22 inches square, 16 inch square opening, 37 glasses	\$12.00
Medium Ventilating Door, 26 inches square, 20 inch square opening, 63 glasses	\$16.00
Large Ventilating Door, 30 inches square, 24 inch square opening, 103 glasses	\$20.00

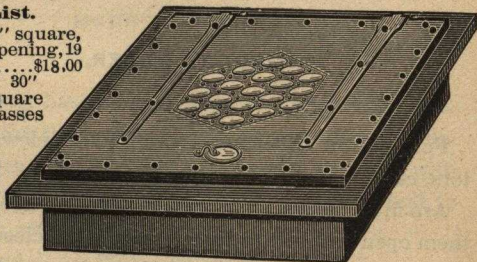
These doors are self-locking and water tight when closed, and protect the hole when open.

Above sizes kept in stock.

WROUGHT IRON COAL HOLE DOOR.

Price List.

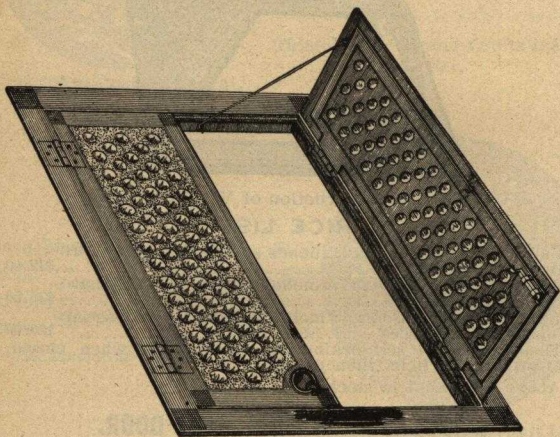
Small Door, 26" square, 20" square opening, 19 glasses	\$18.00
Large Door, 30" square, 24" square opening, 19 glasses	\$24.00



These doors are made very strong, for rough usage; have a very heavy cast iron frame, with thimble 7 inches deep, and wrought iron door made from $\frac{1}{4}$ inch boiler iron, well supported with angle iron. They are well adapted for taking in steam coal or small freight, are water tight when closed, and lock with a bolt on under side. Above sizes kept in stock. Other sizes made to order.

**FLUSH
CONCRETE SIDEWALK LIGHT
TRAP DOORS.**

FCTD No. 10



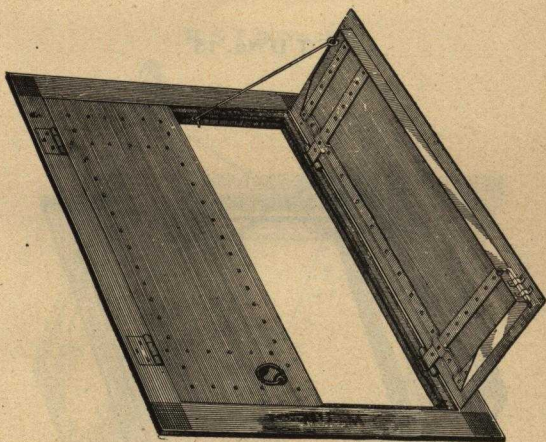
MADE TO ORDER.

For use over basement stairs, slides, sidewalk elevators, etc.

Are fitted with strong brass hinges and hooks to hold them open and bolt to fasten them when closed.

Hinges and doors flush with frame.

Flush doors cannot be made perfectly water-tight but are preferable in front of stores, where the raised doors are unpleasant to walk over. For designs of raised doors see pages 244 and 245.

FLUSH STEEL TRAP DOORS.**F S T D No. 12****MADE TO ORDER.**

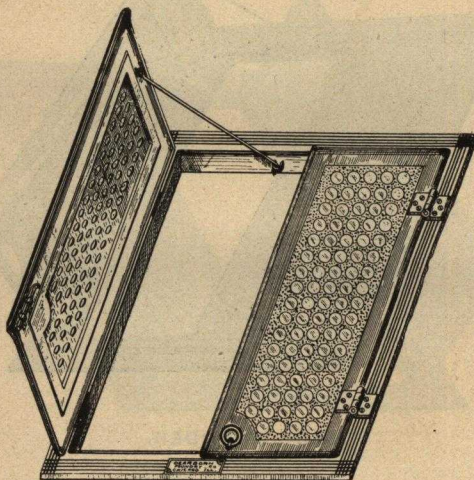
For use over basement stairs, slides, sidewalk elevators, etc. Are the best and most durable doors made. Light to open and close, not easily broken. Made with strong hinges and hooks to hold them open and bolt to fasten them when closed.

Hinges and doors flush with frame.

Flush doors cannot be made perfectly water-tight but are preferable in front of stores, where the raised doors are unpleasant to walk over. For designs of raised doors see pages 244 and 245.

**RAISED CONCRETE SIDEWALK LIGHT
TRAP DOORS.**

R C T D No. 15

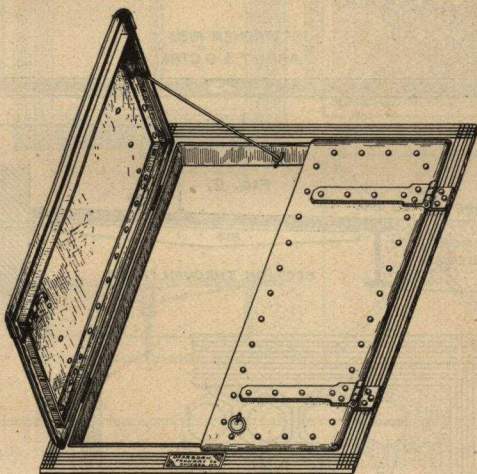


For use over basement stairs, slides, sidewalk elevators etc. These doors are fitted with strong brass hinges and hooks to hold doors open as shown in cut, also bolts to fasten doors when closed.

In writing for prices state size of opening required, also state whether a raised or flush door is preferred.

RAISED STEEL TRAP DOORS.

R S T D No. 20.



For use over basement stairs, slides, sidewalk elevators etc. These doors are fitted with strong hinges and hooks to hold doors open as shown in cut, also bolts to fasten doors when closed.

In writing for prices state size of opening required, also state whether a raised or flush door is preferred.

SIDEWALK FRAMING AND CEMENT LIGHTS.

FIG. 1.

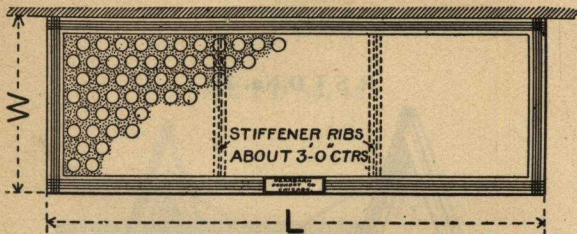


FIG. 2.

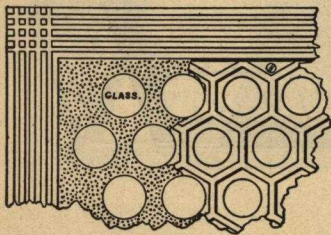
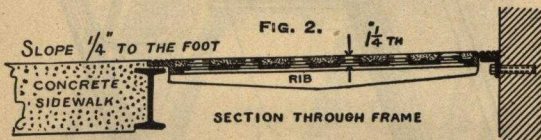


FIG. 3.

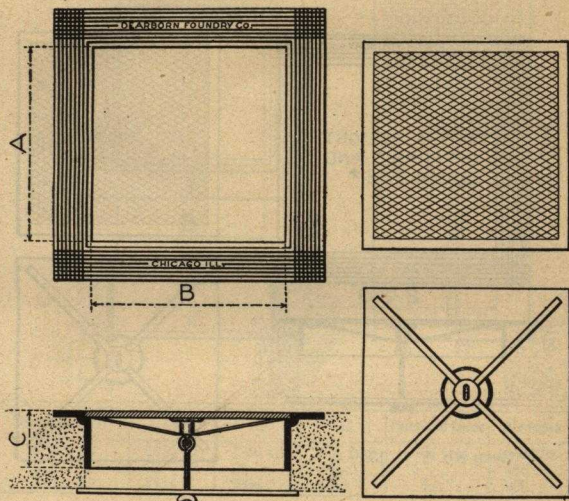


FIG. 4.

Details showing construction of Cement Sidewalk Lights. To avoid mistakes and delays when ordering work of this description, if parties ordering will enclose drawing of what is required, it will facilitate shipments in all cases.

We are prepared to rush this class of work out on short order, giving entire satisfaction.

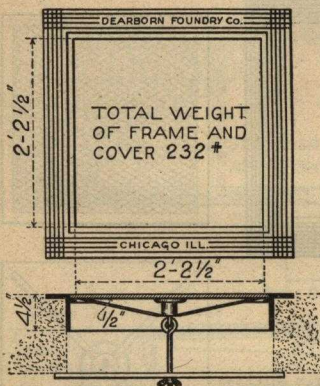
ALLEY AND SIDEWALK FRAMES AND COVERS



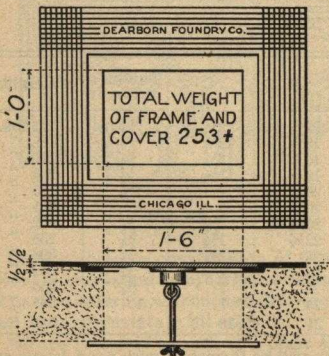
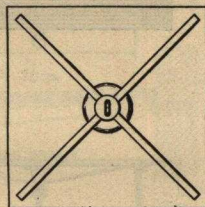
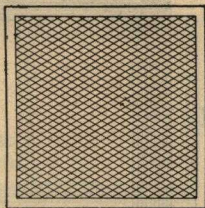
Pattern No.	A	B	C	Thickn's of Cover	Weight
F. C. 1	13½ in.	22½ in.	23¼ in.	¾ in.	277 lbs.
F. C. 2	15 "	18 "	12¼ "	1½ "	188 "
F. C. 3	16 "	16 "	25½ "	5/8 "	110 "
F. C. 4	19 "	19 "	11½ "	1½ "	233 "
F. C. 5	20 "	20 "	7 "	1½ "	185 "
F. C. 6	20 "	20 "	9 "	1 "	361 "
F. C. 7	20½ "	20½ "	21½ "	1½ "	162 "
F. C. 8	22½ "	22½ "	13¾ "	¾ "	258 "
F. C. 9	22 "	22 "	17¾ "	¾ "	398 "
F. C. 10	23 "	23 "	7 "	¾ "	242 "
F. C. 11	24 "	24 "	7 "	¾ "	355 "
F. C. 12	24 "	24 "	7 "	1 "	398 "
F. C. 20	24 "	24 "	18 "	1 "	589 "

Fastening bars as shown will be furnished with each frame and cover when so ordered. Parties ordering same will please give depth of sidewalk when wanted.

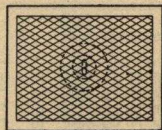
ALLEY AND SIDEWALK FRAMES AND COVERS.



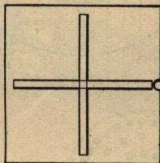
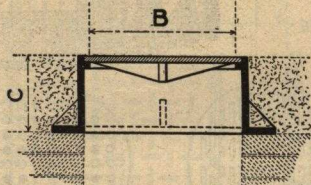
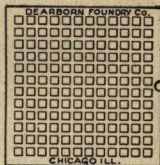
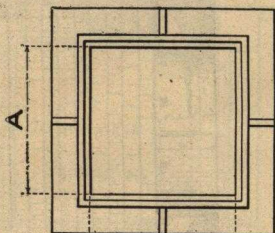
Pattern No. F. C. 13.



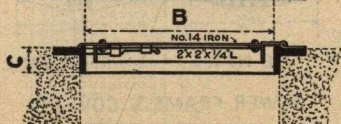
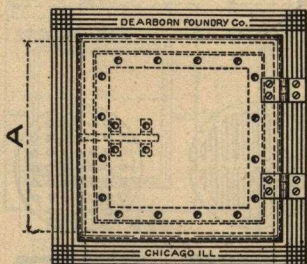
Pattern No. F. C. 14.



ALLEY AND SIDEWALK FRAMES AND COVERS.



Pattern No.	A	B	C	Thick's of Cover	Weight
F. C. 15	18½ in.	18½ in.	9½ in.	¾ in.	352 lbs.
F. C. 16	23 "	23 "	5¾ "	1 "	335 "
F. C. 19	18½ "	18½ "	4¾ "	¾ "	296 "



Pattern No.	F. C. 17	F. C. 18
A	24 in	26½ in
B	24 "	28¾ "
C	17¾ "	3 "
Cover No.	14	steel
Weight	427lbs	197lbs

MANHOLE FRAMES AND COVERS.

MF 2

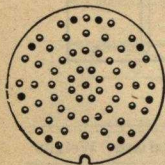
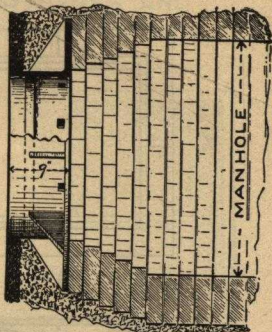
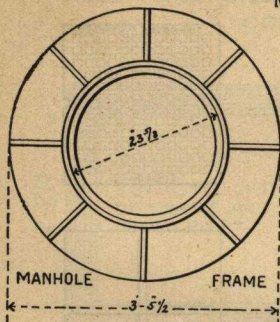


FIG No 450

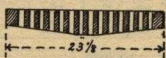
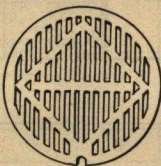


FIG No 451

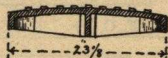
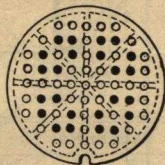
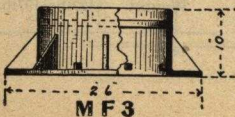
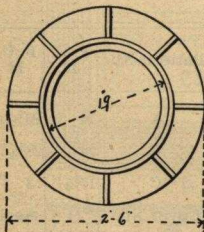


FIG No 452



MF 3

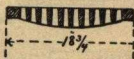
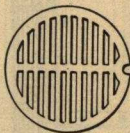


FIG No 453

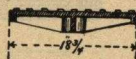
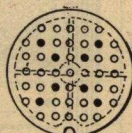
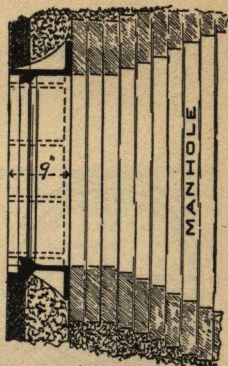
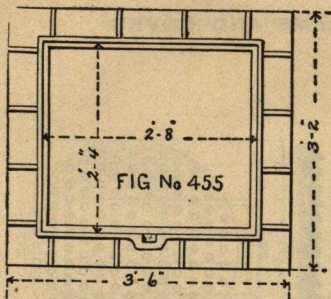


FIG No 454

SEWER FRAME & COVERS

MANHOLE FRAMES AND COVERS.



MANHOLE FRAME & COVER
USED FOR UNDERGROUND
ELECTRIC OR TELEPHONE
SERVICE.

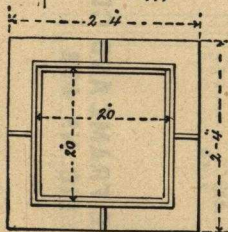
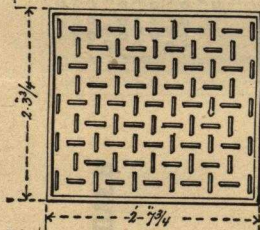


FIG No 456.

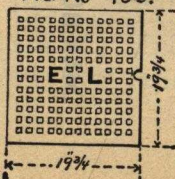
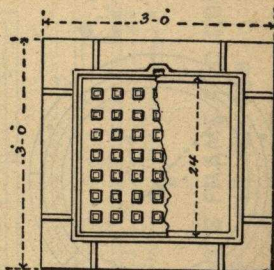
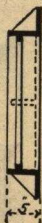
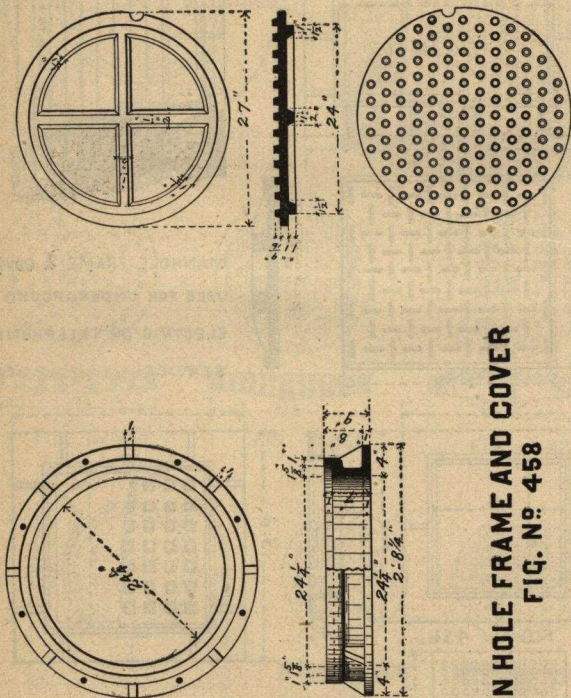
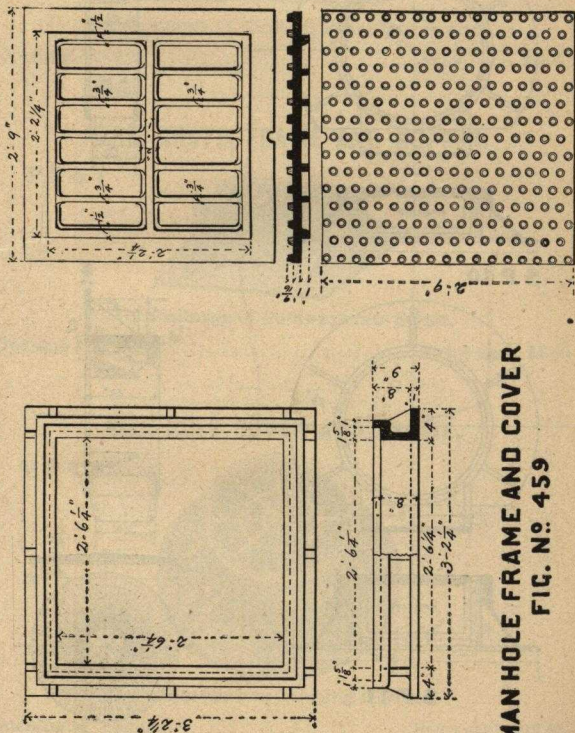


FIG No 457

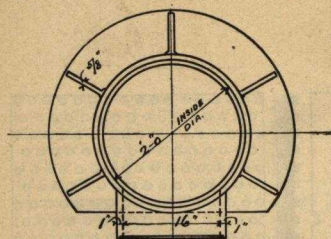
MAN HOLE FRAME AND COVER.

MAN HOLE FRAME AND COVER
FIG. NO. 458

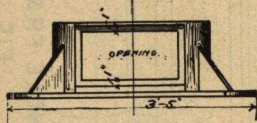
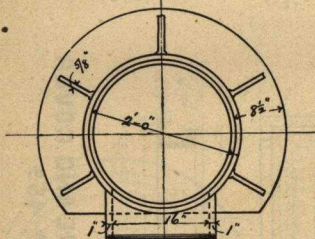
MAN HOLE FRAME AND COVER.



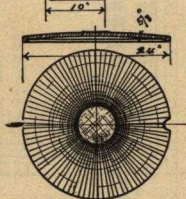
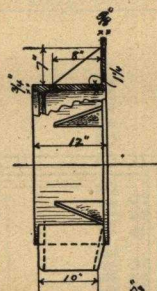
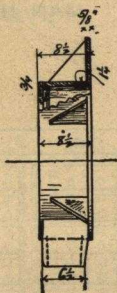
MAN HOLE FRAMES AND COVERS.



SP 10



SP 11

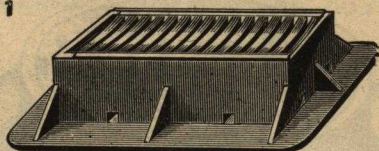


COVER A.

SP 12

SEWER GRATE, FRAME AND HOPPER.

SFH 1

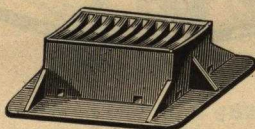


For Drainage of Street Gutters into Sewer.

Opening 12" x 24".....Price each, \$10.50

PARK GRATE, FRAME AND HOPPER.

PFH 1

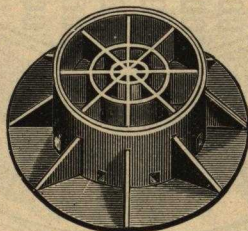


For Drainage of Pathways into Sewer.

Opening 8" x 12".....Price each, \$4.00

MAN-HOLE COVER AND FRAME.

MFC 1

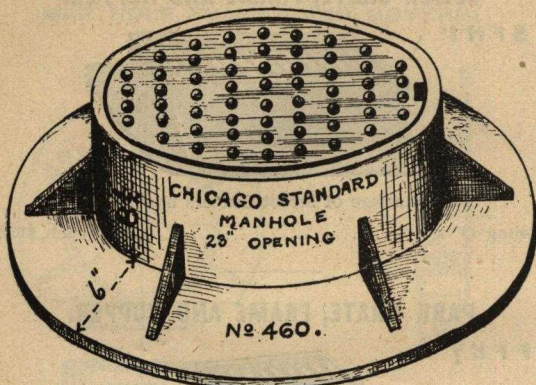


For Entrance in Cleaning Sewers.

Opening 24" diameter.....Price each, \$13.50

Write for Discount on large orders.

MAN HOLE FRAMES AND COVERS

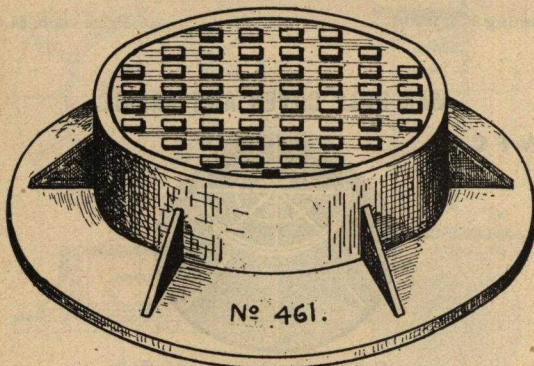


Specifications.

Diameter inside	23 inches
Depth	9 inches
Flange,	6 inches

Weight, 470 lbs.

Furnished with solid or grated cover.



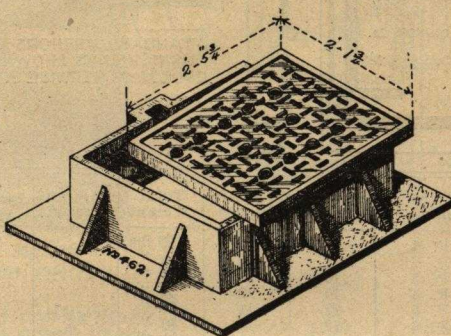
Specifications.

Diameter inside	23 inches
Depth	6 inches
Flange	6 inches

Weight, 450 lbs.

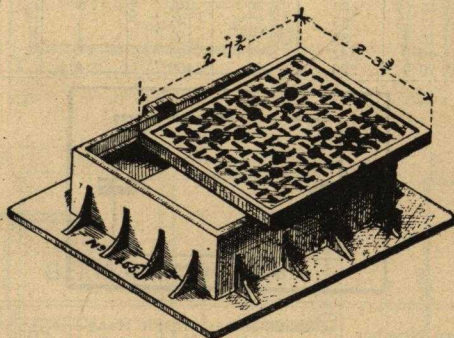
Furnished with solid or grated cover.

MANHOLE FRAMES AND COVERS



PATTERN NO. 462

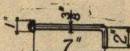
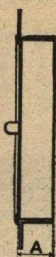
Weight. 880 lbs.



PATTERN NO. 463

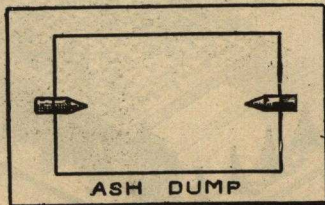
Weight. 760 lbs.

ASH PIT FRAMES AND DOORS.



STANDARD ANCHORS
FURNISHED AS SHOWN
UNLESS OTHERWISE SPECIFIED

Pattern Number	Height in Inches	Width in Inches	Total Weight	Depth of Frame	List Price Each with Anchors
A. P. 1	8	11	25 lbs.	.....	\$ 2.50
A. P. 2	9	9	20 "	3	2.75
A. P. 3	10	10	17 "	.....	2.75
A. P. 4	10	12	22 "	.....	3.00
A. P. 5	12	14	37 "	.....	4.00
A. P. 6	12	16	40 "	3	4.00
A. P. 7	14	36	100 "	3 1/4	6.00
A. P. 8	15	19	50 "	3	4.50
A. P. 9	16	16	45 "	3	4.50
A. P. 10	18	16	55 "	3 1/4	5.00
A. P. 11	18	21	58 "	3	5.00
A. P. 12	19 1/4	15 1/4	50 "	3 1/4	5.00
A. P. 13	18	24	110 "	4	6.50
A. P. 14	24	30	225 "	6	11.00
A. P. 15	28	17	120 "	3 1/4	7.00
A. P. 16	30	30	245 "	3	10.50
A. P. 17	35	27 1/2	135 "	3	9.50
A. P. 18	36	24	150 "	4	9.50
A. P. 19	42	24	160 "	3	12.00
A. P. 20	36	24	406 "	4 3/4	25.00

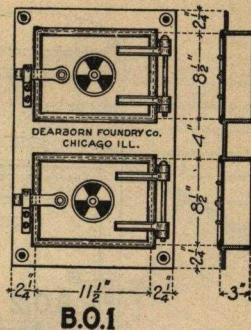


Pattern Number	Outside Measurement	Inside Measurement	Price Each
A. D. 10	6 x 10 in.	4 1/2 x 7 3/8 in.	\$0.50
A. D. 11	10 3/4 x 10 3/4 "	8 x 8 "	.75

ASH CHUTES AND BAKE OVEN DOORS.



Fig. 216
ASH CHUTE.



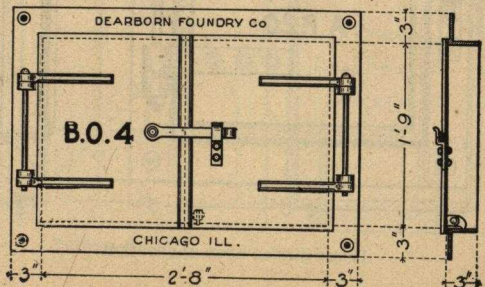
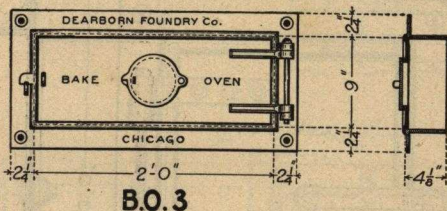
- No. 2A. { opening $7\frac{1}{4} \times 8\frac{3}{4}$,
outside $11 \times 14\frac{1}{4}$, }
- No. 2B. { opening $11\frac{1}{4} \times 12\frac{1}{2}$,
outside $15\frac{3}{4} \times 19\frac{1}{2}$, }

Weight, 20 lbs.

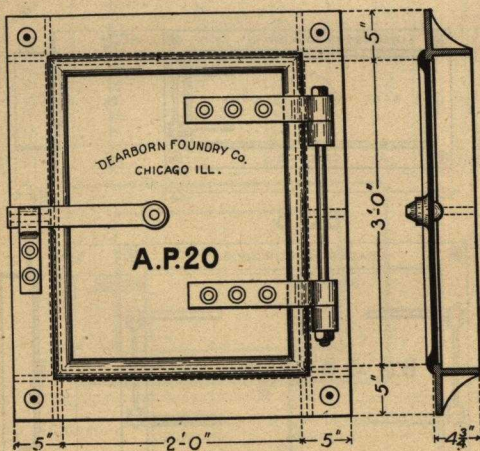
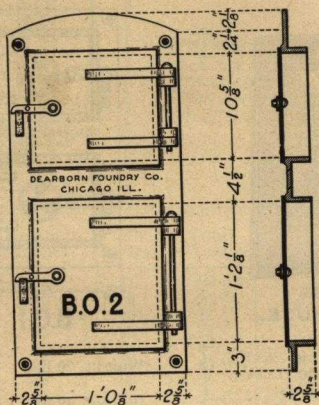
Price, \$2.50

Weight, 42 lbs.

Price, \$3.50

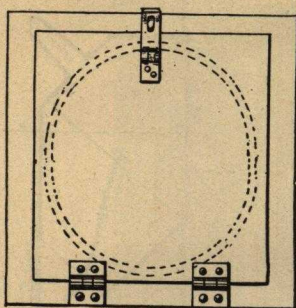


BAKE OVEN AND ASH PIT DOORS AND FRAMES.

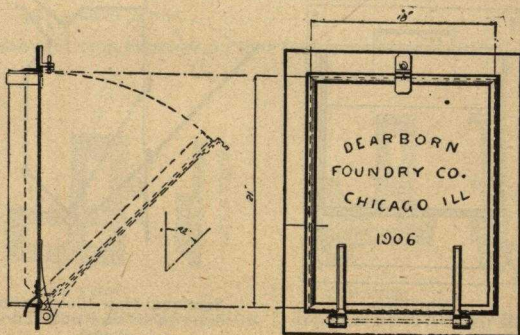
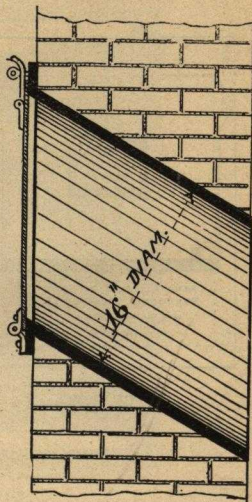


Prices quoted upon application.

COAL CHUTES FOR BASEMENT WALLS

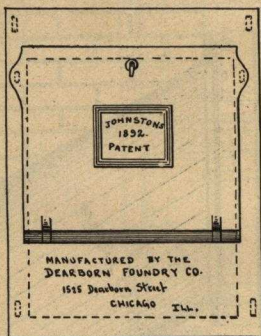


Pattern No. 1

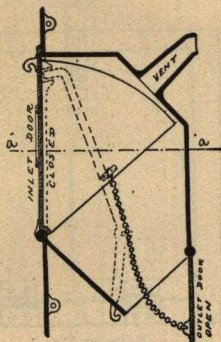


Pattern No. 2

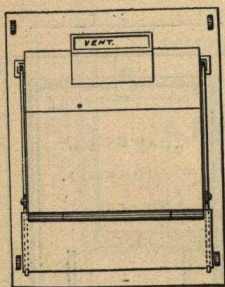
JOHNSTON PATENT AUTOMATIC DUSTLESS ASH CHUTE.



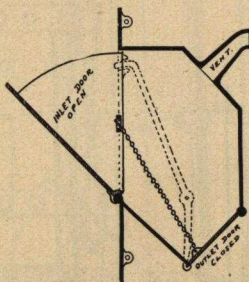
Front View.



Sectional view showing inlet door closed and outlet door open.



Rear View.



Sectional view showing inlet door open and outlet door closed.

Prices quoted on application.

WROUGHT IRON SHUTTERS.

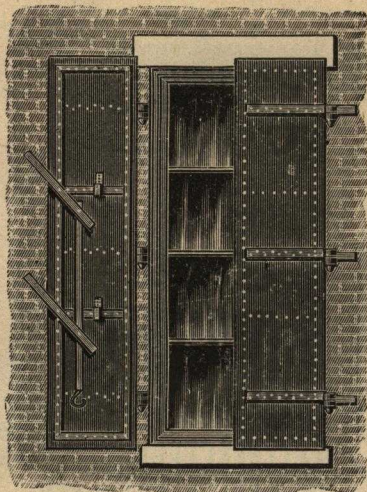
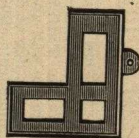


Fig. 212.

Wrought Iron Shutters, in two fold, as per cut shown,
per square foot. 45c to 55c

Wrought Iron Shutters, in four fold, per square foot. 95c to \$1 25



TOP VIEW.



SIDE VIEW.

**Cast Iron Shutter Brick
Style A.**

Price, per pair, 60c.



TOP VIEW.



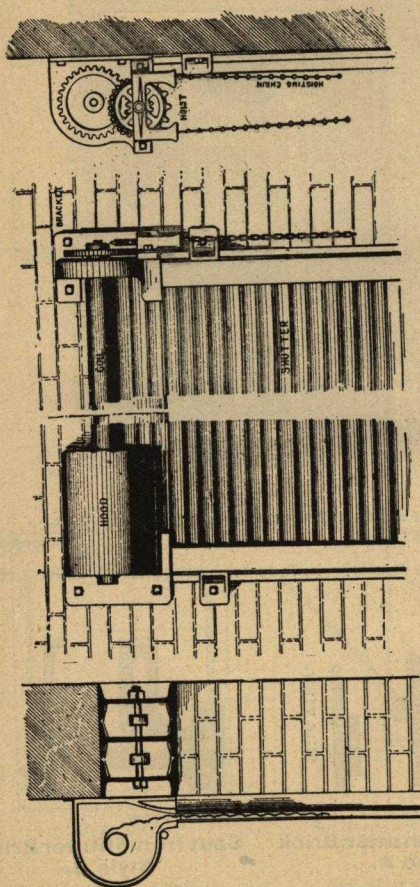
SIDE VIEW.

**Cast Iron Shutter Brick
Style B.**

Price, per pair, 50c.

Kinnear Steel Rolling Shutters

Construction No. F. H. 21

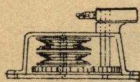


ELEVATION

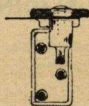
VERTICAL SECTION

Construction No. F. H. 21 is the same construction as F. H. 20; the difference being that the grooves are set out from the wall about one and three-fourths inches. This is done in order to allow the curtain to hang as near the line of the inside of the shaft as possible when closed. This style of construction is used for openings from eight to sixteen feet wide and from nine to sixteen feet high.

CROSS PATENT FOLDING DOOR



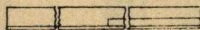
Detail of Double
Bracket Showing
Hoisting Device.



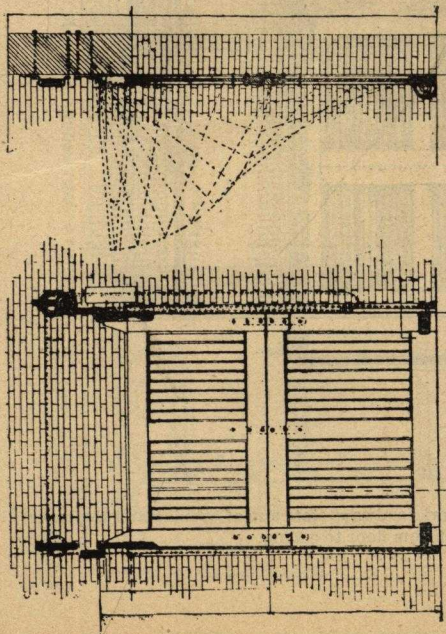
Face View of Shoe



SECTION "B-B"
Showing relative posi-
tions of door, bottom
shoe and guide.

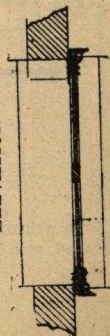


Detail of Guide



SECTION "A-A"

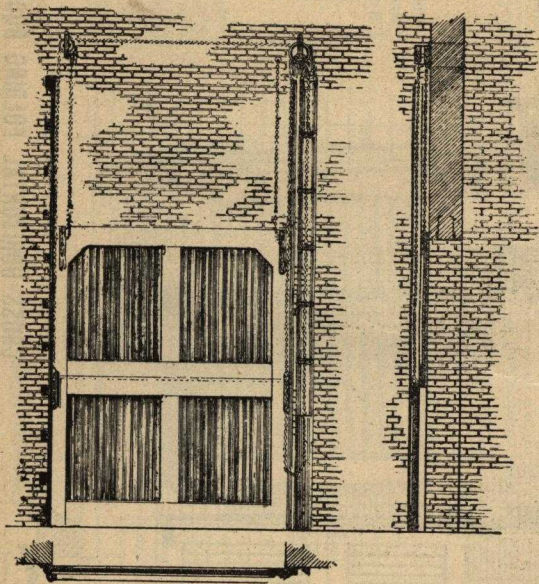
ELEVATION



SECTIONAL PLAN

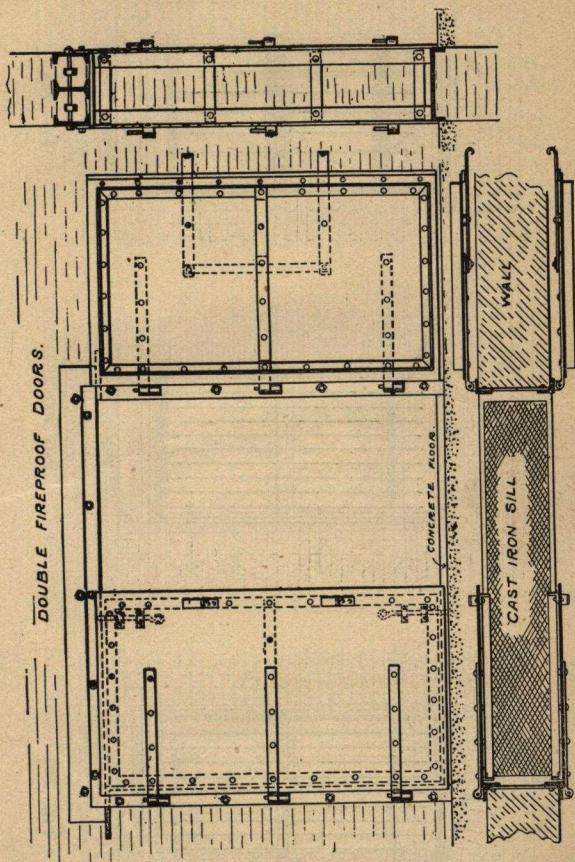
DETAIL OF
CROSS HORIZONTAL FOLDING DOOR

CROSS PATENT SLIDING UP DOORS



In writing for prices always state size of opening and thickness of wall, also height from floor to ceiling.

FIREPROOF DOORS FOR FIRE WALLS.



Prices quoted on Application.

PLAIN WINDOW GUARDS.

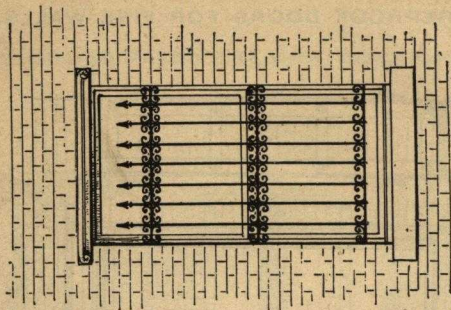


FIG. 206.

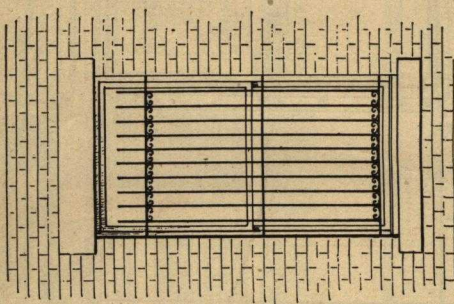


FIG. 300

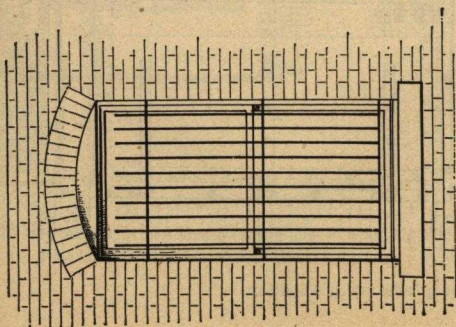


FIG. 207

ORNAMENTAL WINDOW GUARDS.

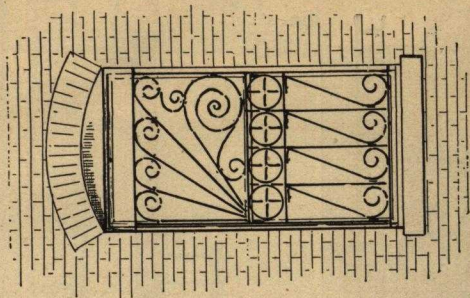


FIG 307

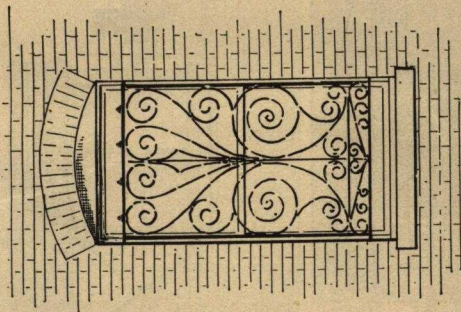


FIG 306

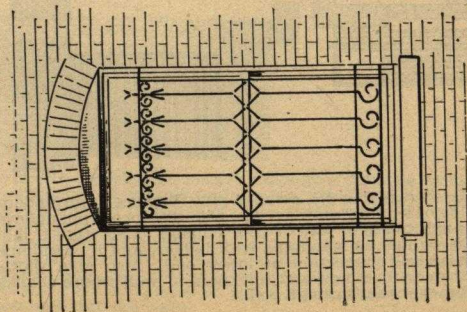
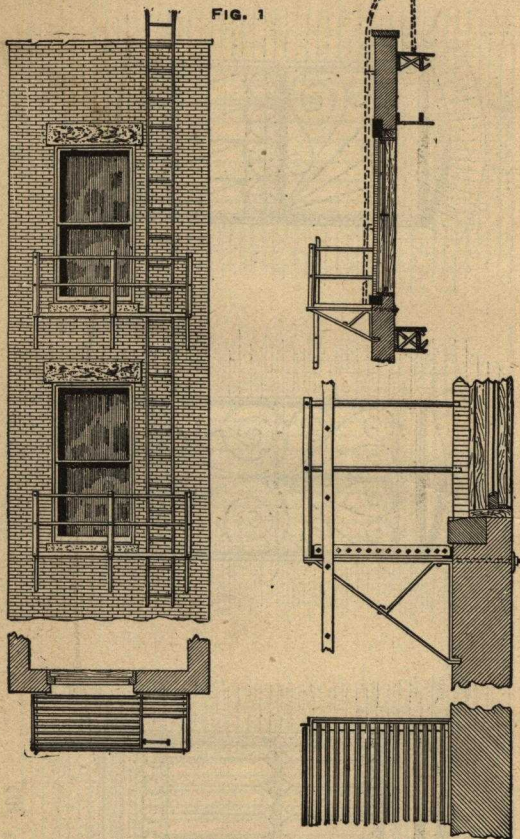


FIG 305

FIRE ESCAPE.

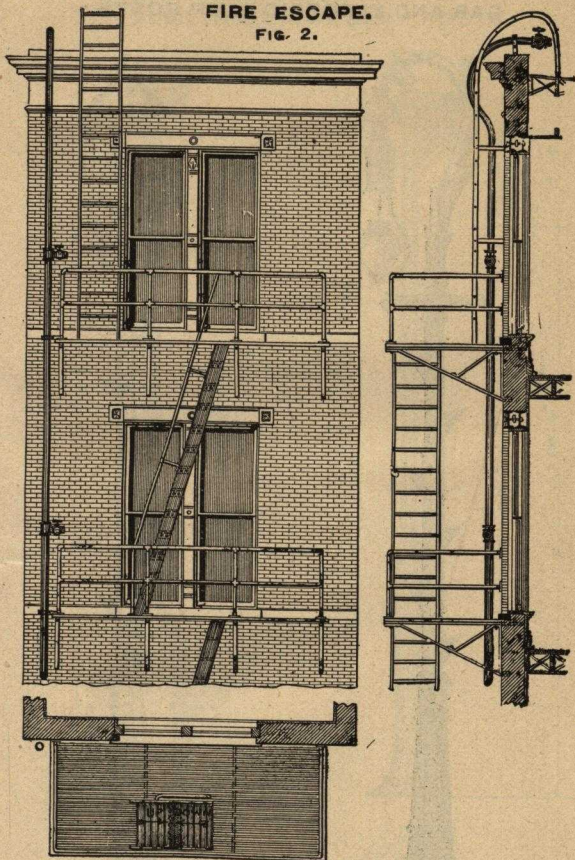
FIG. 1



NOTE.—In ordering fire escapes give distance from underside to underside of window or door sills; also distance from underside of window sills to top of wall or roof coping. Also state if ladder as shown is wanted, or standpipe with ladder, and if standpipe is to have Siamese connection at lower end. Also give width of window or door openings, and thickness of wall where shanks of platform bracket pass through wall.

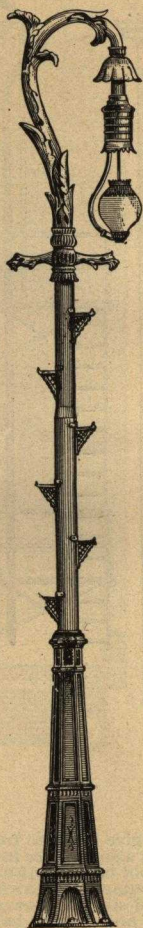
FIRE ESCAPE.

FIG. 2.

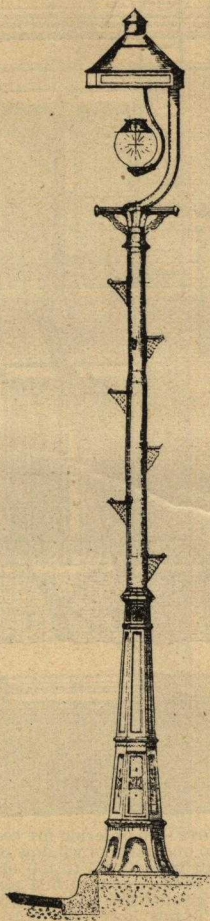


NOTE.—In ordering fire escape stairs give distance from underside to underside of window or door sills, also distance from underside of window sill to top of wall or roof coping. If fire escape stairs from ground to first platform is wanted, then give distance from ground line to underside of second story window sill. Also state if this lower run is to be hinged and counter balanced or stationary. Also state if stand pipe is to have Siamese connection at bottom. Give thickness of walls where shanks of platform brackets pass through walls.

GAS AND ELECTRIC LAMP POSTS.

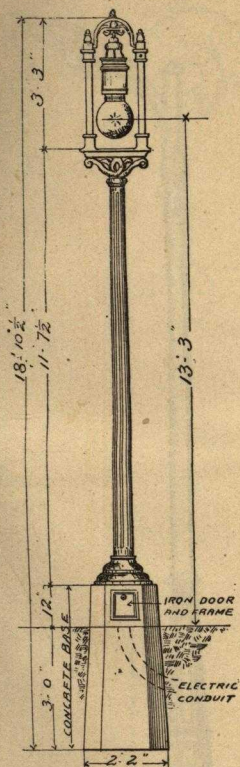


ELECTRIC PATTERN
NO. 475

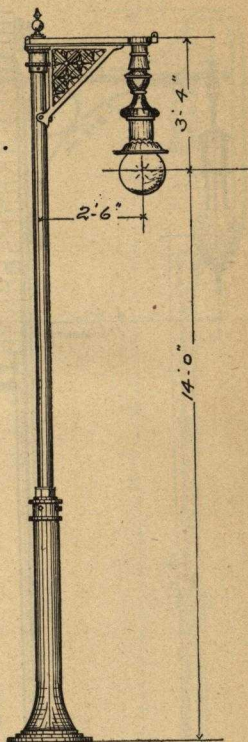


COLUMBIAN PATTERN
NO. 476

ELECTRIC LIGHT LAMP POSTS



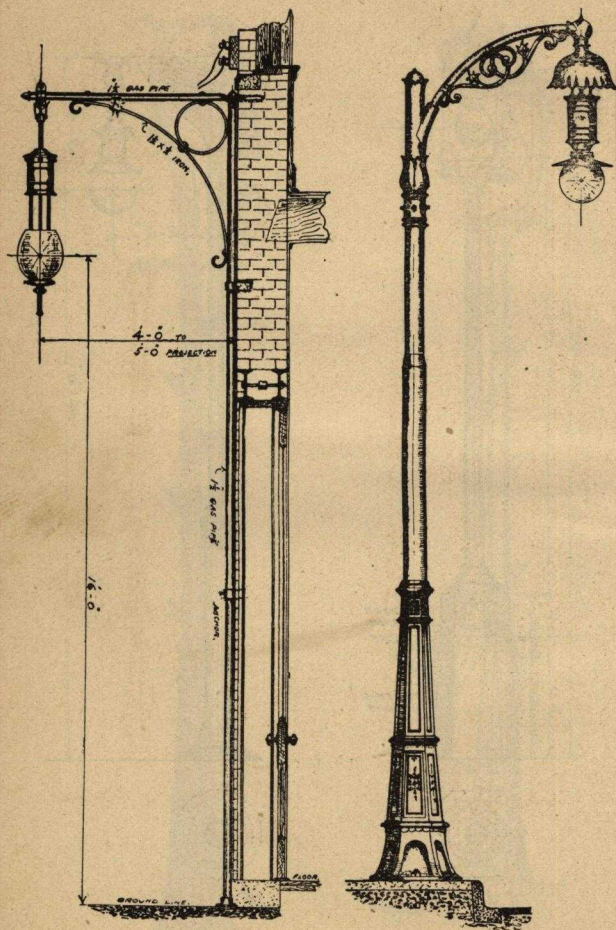
ELP 5



ELP 6

Prices quoted on application.

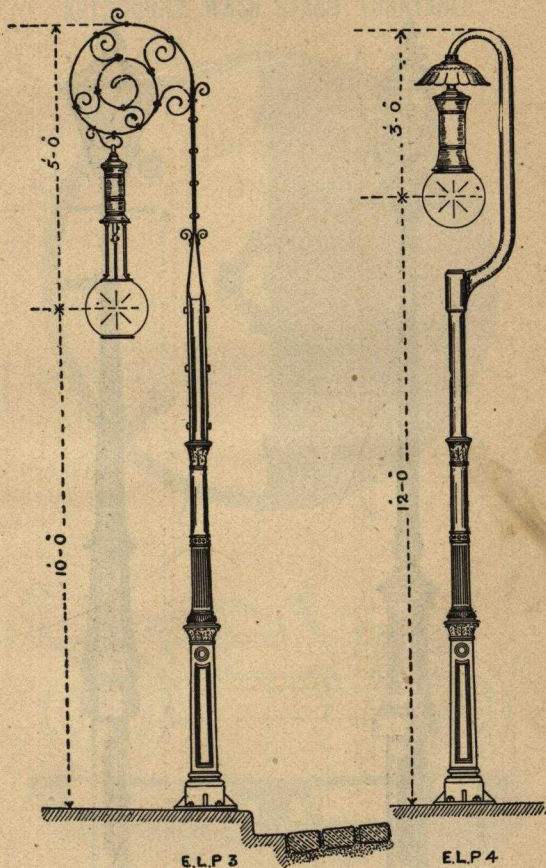
ELECTRIC LIGHT LAMP POSTS



Pattern No. 478

Pattern No. 477

ELECTRIC LIGHT POSTS.

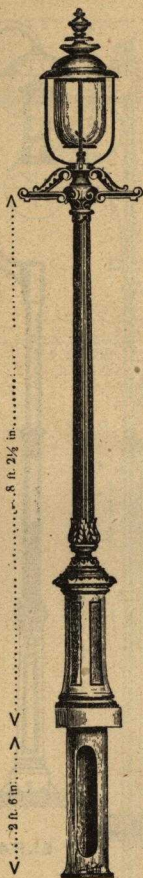


Weight, 350 lbs. each.
Price \$40.00 each.

Weight, 300 lbs. each.
Price \$35.00 each.

The above price does not include Electric Light Lamps
in either case.

GAS LIGHT LAMP POSTS



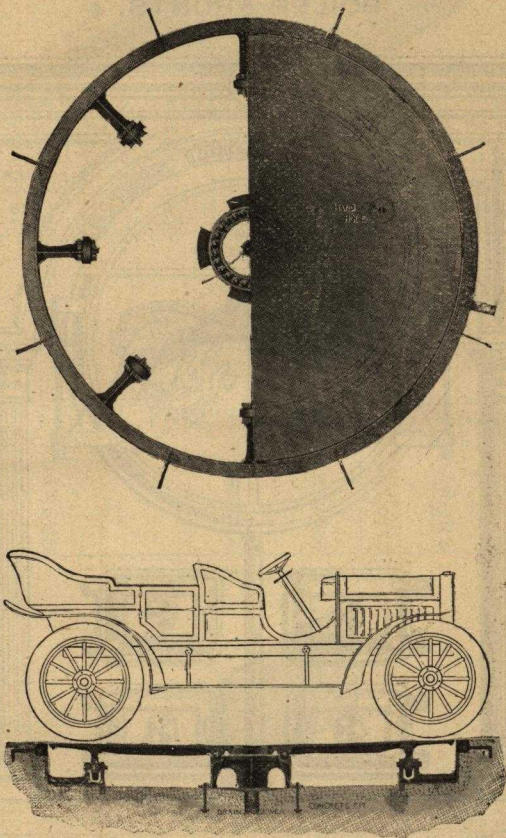
Boulevard Pattern
No. 1



City Pattern
No. 2

Prices quoted on application

AUTOMOBILE WASH STAND TURNTABLE



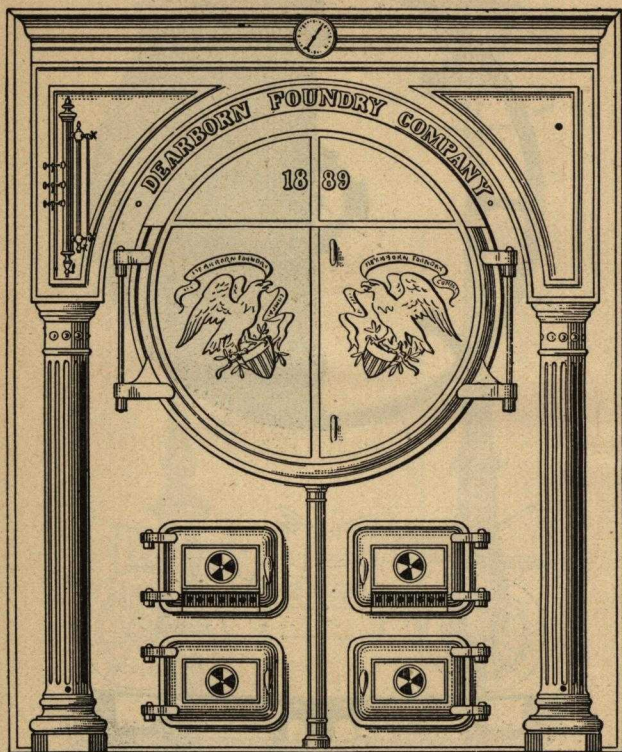
Diameter of Table

Maximum Wheel Base

10' 6"	100 inches
11' 6"	113 "
12' 6"	126 "

Prices quoted on application.

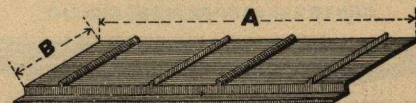
BOILER FRONTS.



The above cut represents our pattern for 42-in., 44-in., 48-in., 54-in., 60-in. and 66-in. Boilers.

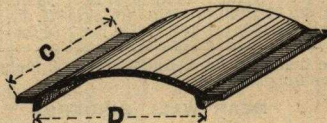
Special designs for fronts for 36-in. and 72-in. Boilers mailed if desired. A full assortment of Boiler fittings carried in stock.

DEAD PLATE.



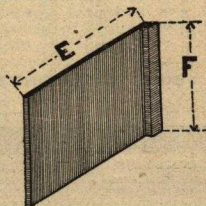
Size of Boiler.	A	B	Size of Door Opening.	Weight.
36 in. Boiler	48	14	10½ x 14 in.	225 lbs.
42 " "	54	16	13 x 16 "	270 "
48 " "	60	16	13 x 16 "	300 "
54 " "	66	16	13 x 16 "	335 "
60 " "	72	20	14 x 20 "	364 "
66 " "	78	20	14 x 20 "	395 "
72 " "	84	20	14 x 20 "	425 "

TOP LINER.



Size of Boiler.	D	C	Weight.
36 in. Boiler	18	14	70 lbs.
42 " "	16	16	75 "
48 " "	16	16	75 "
54 " "	16	16	75 "
60 " "	20	20	140 "
66 " "	20	20	140 "
72 " "	20	20	140 "

SIDE LINER.



Size of Boiler.	E	F	Weight.
36 in. Boiler	14	10½	30 lbs.
42 " "	16	13	40 "
48 " "	16	13	40 "
54 " "	16	13	40 "
60 " "	20	14	55 "
66 " "	20	14	55 "
72 " "	20	14	55 "

ANGLE BARS AND WALL BINDERS.

CENTRE BEARING BAR. Fig. 162.



Size of Boiler	30 in.	36 in.	42 in.	44 in.	48 in.	54 in.	60 in.
Length of Bar	3ft. 6in.	4ft. 0in.	4ft. 6in.	4ft. 8in.	5ft. 0in.	5ft. 6in.	6ft. 0in.
Weight...	52 lbs.	60 lbs.	67 lbs.	70 lbs.	75 lbs.	82 lbs.	90 lbs.

BACK ANGLE BAR. Fig. 161.



Size of Boiler	30 in.	36 in.	42 in.	44 in.	48 in.	54 in.	60 in.
Length of Bar	3ft. 6in.	4ft. 0in.	4ft. 6in.	4ft. 8in.	5ft. 0in.	5ft. 6in.	6ft. 0in.
Weight...	42 lbs.	48 lbs.	54 lbs.	56 lbs.	60 lbs.	66 lbs.	72 lbs.

The inside depth of Back Angle Bar is 2 inches, and also has 2-inch bearings for grate bars.

REAR WALL BINDERS.



Size of Boiler	Measurements.				
	A	B	C	D	E
42 in.	6 in.	3ft. 6 $\frac{1}{2}$ in.	2 ft. 4 in.	6 in.	6ft. 10 $\frac{1}{2}$ in.
48 "	6 "	3 " 7 "	2 " 10 $\frac{3}{4}$ "	6 "	7 " 5 $\frac{3}{4}$ "
54 "	6 "	4 " 3 $\frac{1}{2}$ "	2 " 10 $\frac{1}{4}$ "	6 "	8 " 1 $\frac{1}{2}$ "
60 "	6 "	4 " 5 "	3 " 4 $\frac{1}{4}$ "	5 "	8 " 9 $\frac{1}{2}$ "
66 "	6 "	5 " 7 "	3 " 11 $\frac{3}{4}$ "	6 "	10 " 6 $\frac{3}{4}$ "
72 "	6 "	5 " 7 "	3 " 11 $\frac{3}{4}$ "	6 "	10 " 6 $\frac{3}{4}$ "

SIDE WALL BINDERS.



Size of Boiler	Measurements			
	F	G	H	I
42 in.	6 in.	5 ft. 10 $\frac{1}{2}$ in.	6 in.	6 ft. 10 $\frac{1}{2}$ in.
48 "	6 "	6 " 5 $\frac{3}{4}$ "	6 "	7 " 5 $\frac{3}{4}$ "
54 "	6 "	7 " 1 $\frac{1}{2}$ "	6 "	8 " 1 $\frac{1}{2}$ "
60 "	6 "	7 " 9 $\frac{1}{2}$ "	6 "	8 " 9 $\frac{1}{2}$ "
66 "	6 "	9 " 6 $\frac{3}{4}$ "	6 "	10 " 6 $\frac{3}{4}$ "
72 "	6 "	9 " 6 $\frac{3}{4}$ "	6 "	10 " 6 $\frac{3}{4}$ "

COMMON GRATE BAR.



Fig. 34.

Length of Grate Bars	Width	Depth at Ends	Space betw'n Bars	Length of Grate Bars	Width	Depth at Ends	space b'twn Bars
6 ft. 0 in.	$3\frac{7}{16}$ in.	2 in.	$\frac{9}{16}$ in.	3 ft. $8\frac{3}{4}$ in.	$3\frac{1}{16}$ in.	$1\frac{7}{8}$ in.	$\frac{1}{16}$ in.
5 " 6 "	3 "	2 "	$\frac{7}{8}$ "	3 " $7\frac{1}{2}$ "	$3\frac{5}{16}$ "	$2\frac{1}{2}$ "	" "
5 " 0 "	$4\frac{1}{4}$ "	2 "	$\frac{1}{8}$ "	3 " 6 "	3 "	2 "	" "
5 " 0 "	$3\frac{1}{16}$ "	2 "	$\frac{1}{2}$ "	2 " 10 "	$3\frac{7}{16}$ "	2 "	" "
4 " 6 "	$3\frac{5}{8}$ "	2 "	$\frac{1}{2}$ "	2 " 9 "	$2\frac{7}{8}$ "	2 "	" "
4 " 6 "	$3\frac{1}{2}$ "	2 "	$\frac{1}{2}$ "	2 " 8 "	$2\frac{3}{4}$ "	2 "	" "
4 " 4 "	$2\frac{3}{4}$ "	$1\frac{7}{8}$ "	$\frac{7}{8}$ "	2 " 6 "	$2\frac{5}{8}$ "	2 "	" "
4 " $3\frac{1}{2}$ "	$3\frac{3}{8}$ "	$1\frac{7}{8}$ "	$\frac{5}{8}$ "	2 " $3\frac{3}{8}$ "	$2\frac{7}{8}$ "	$1\frac{9}{16}$ "	" "
4 " 1 "	$2\frac{1}{16}$ "	2 "	$\frac{1}{2}$ "	2 " $3\frac{1}{4}$ "	$3\frac{1}{16}$ "	$1\frac{7}{8}$ "	" "
4 " 0 "	$3\frac{1}{16}$ "	2 "	$\frac{7}{8}$ "	2 " $2\frac{1}{2}$ "	$2\frac{3}{8}$ "	$1\frac{7}{8}$ "	" "
4 " 0 "	$3\frac{1}{4}$ "	2 "	$\frac{5}{8}$ "	2 " 2 "	$2\frac{3}{4}$ "	$1\frac{7}{8}$ "	" "
4 " 0 "	3 "	2 "	$\frac{3}{4}$ "	2 " 0 "	3 "	$1\frac{7}{8}$ "	" "
3 " 11 "	4 "	2 "	$\frac{3}{4}$ "	1 " 8 "	$2\frac{1}{16}$ "	$1\frac{1}{8}$ "	" "
3 " 10 "	$3\frac{1}{4}$ "	$2\frac{1}{4}$ "	$\frac{1}{2}$ "				

NEW PATTERN GRATE BAR.



Fig. 35.

Length of Grate Bar	Width	Depth at Ends	Space betw'n Bars	Length of Grate Bars	Width	Depth at End	space b'twn Bars
2 ft. 6 in.	$4\frac{5}{16}$ in.	2 in.	$\frac{7}{16}$ in.	4 ft. 0 in.	$4\frac{7}{8}$ in.	2 in.	$\frac{1}{2}$ in.
3 " 0 "	$4\frac{5}{16}$ "	2 "	$\frac{7}{16}$ "	5 " 0 "	$4\frac{7}{8}$ "	2 "	$\frac{1}{2}$ "
3 " 6 "	$4\frac{3}{4}$ "	2 "	$\frac{1}{2}$ "	5 " 6 "	$5\frac{1}{16}$ "	2 "	$\frac{1}{16}$ "
3 " 0 "	$4\frac{3}{4}$ "	2 "	$\frac{1}{2}$ "	6 " 0 "	$5\frac{1}{16}$ "	2 "	$\frac{9}{16}$ "



Patt. G. B. 5.

Length	Width	Metal	Air Space	Weight
36 in.	6 in.	$\frac{3}{4}$ in.	$\frac{5}{8}$ in.	36 lbs.
54 "	6 "	$\frac{3}{4}$ "	$\frac{5}{8}$ "	60 "
60 "	6 "	$\frac{3}{4}$ "	$\frac{5}{8}$ "	68 "

GRATE BARS.



Patt. G. B. 1.

Length	Width	Metal	Air Space	Weight
54 in.	6 in.	$\frac{1}{2}$ in.	$\frac{3}{8}$ in.	104 lbs.
60 "	6 "	$\frac{1}{2}$ "	$\frac{3}{8}$ "	127 "



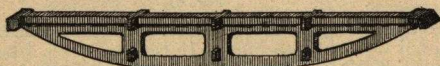
Patt. G. B. 2.

Length, 48 in. Width, 6 in. Metal $\frac{1}{2}$ in. Air space $\frac{1}{2}$ in.
Weight 112 lbs.



Patt. G. B. 4.

Length, $48\frac{1}{2}$ in. Width, $1\frac{1}{4}$ in. Metal, $\frac{5}{8}$ in. Air space, $\frac{5}{8}$ in.
Weight, 20 lbs.



Patt. G. B. 6.

Length, 48 in. Width, $1\frac{1}{4}$ in. Metal, $\frac{3}{4}$ in. Air space, $\frac{1}{2}$ in.
Weight, 24 lbs.

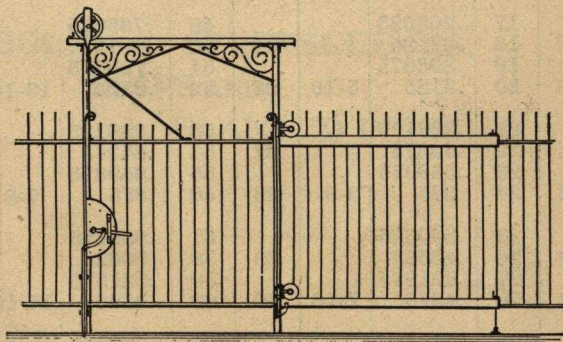
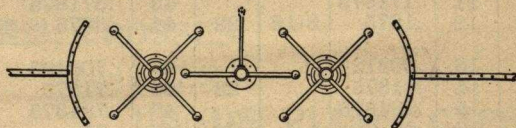
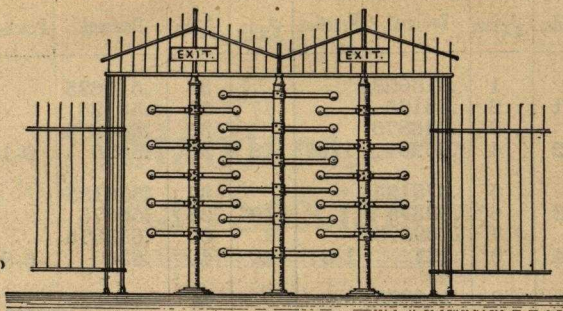
SKELETON ARCH PLATE.



Fig. 160.

Size of Boiler	30 in.	36 in.	42 in.	44 in.	48 in.	54 in.	60 in.
Length...	36 "	42 "	48 "	50 "	54 "	60 "	66 "
Radius...	22 "	22 "	22 "	22 "	22 "	22 "	26 "
Weight...	180 lbs.	185 lbs.	215 lbs.	220 lbs.	245 lbs.	260 lbs.	300 lbs.

TURNSTILES AND BAGGAGE GATE.



Prices quoted on application. On turnstiles, Railings or Baggage Gates, separately. Send full information and requirements.

DEARBORN FOUNDRY COMPANY.

DECIMALS OF AN INCH FOR EACH $\frac{1}{64}$ th.

$\frac{1}{32}$ ds.	$\frac{1}{64}$ ths.	Decimal.	Fraction	$\frac{1}{32}$ ds.	$\frac{1}{64}$ ths.	Decimal.	Fraction
	1	.015625			33	.515625	
1	2	.03125		17	34	.53125	
	3	.046875			35	.546875	
2	4	.0625	1-16	18	36	.5625	9-16
	5	.078125			37	.578125	
3	6	.09375		19	38	.59375	
	7	.109375			39	.609375	
4	8	.125	1-8	20	40	.625	5-8
	9	.140625			41	.640625	
5	10	.15625		21	42	.65625	
	11	.171875			43	.671875	
6	12	.1875	3-16	22	44	.6875	11-16
	13	.203125			45	.703125	
7	14	.21875		23	46	.71875	
	15	.234375			47	.734375	
8	16	.25	1-4	24	48	.75	3-4
	17	.265625			49	.765625	
9	18	.28125		25	50	.78125	
	19	.296875			51	.796875	
10	20	.3125	5-16	26	52	.8125	13-16
	21	.328125			53	.828125	
11	22	.34375		27	54	.84375	
	23	.359375			55	.859375	
12	24	.375	3-8	28	56	.875	7-8
	25	.390625			57	.890625	
13	26	.40625		29	58	.90625	
	27	.421875			59	.921875	
14	28	.4375	7-16	30	60	.9375	15-16
	29	.453125			61	.953125	
15	30	.46875		31	62	.96875	
	31	.484375			63	.984375	
16	32	.5	1-2	32	64	1.	1

Dearborn Foundry Company

MANUFACTURES

Standard Gas Specials

FROM
3 INCH TO
30 INCH
DIAMETER

TEES, CROSSES,
REDUCERS,
BENDS, PLUGS, CAPS,
SOLID AND SPLIT SLEEVES,
DRIPS AND
FLANGED PIPES.

General Castings

For Gas and Water Works.

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